WEST MARKETING ISSUE
Pages 9-16

Croplife®

TOTAL CIRCULATION OVER 9,070 COPIES EACH WEEK
BPA Member, Business Publications Audit

A WEEKLY NEWSPAPER FOR THE FARM CHEMICAL MANUFACTURER, FORMULATOR AND DEALER

Published by The Miller Publishing Co., Minneapolis, Minn.

Vol. 5 | Accepted as Controlled Circulation Publication at Minneapolis, Minn. | MAY 12, 1958 | Subscription Rates: $5 for 1 year, $9 for 2 years | No. 19

Big Export of Pesticides From U.S. Last Year

Total of 318 Million Pounds Was 8% Greater Volume Than Earlier

WASHINGTON—More than 317.7 million pounds of pesticides, with a value of slightly more than $86 million, were exported last year, the U.S. Department of Commerce reports. This represents an 8% increase in quantity and a 5% increase in value over the 1956 figures. The department also points out the value of 1957 shipments is 1500% larger than those of the pre-war period (1939).

The number one export customer last year was Canada, which purchased more than 32.5 million pounds of pesticides valued at $10 million. Mexico purchased 28.7 million pounds, worth slightly more than $8 million.

Copper sulfate was the largest single pesticide exported last year. Shipments of this material, totaling more than 67 million pounds valued at $6.5 million, went principally to the Latin American countries. Honduras, Costa Rica and Guatemala were leading purchasers.

The quantity of copper sulfate exported during 1957 increased by 7 million pounds, but the value decreased by $1.5 million because of declining prices during the year.

Named to Board

WICHITA—Wesley H. Sowers, president of Frontier Chemical Co., a division of Vulcan Materials Co., has been elected to the board of directors for the Vulcan company. Announcement was made by Charles W. Ireland, Vulcan Materials Co. president, Birmingham, Ala. Mr. Sowers holds a number of patents in the field of petroleum technology and is listed in American Men of Science.

American Cyanamid To Build Maleic Anhydride Plant

NEW YORK—American Cyanamid Co. will commence construction this summer on a new, multi-million dollar maleic anhydride manufacturing plant at Bridgeville, Pa., it was announced May 7 by W. G. Malcolm, president.

Maleic anhydride is an organic chemical used in manufacturing paints, varnishes, laminates, agricultural chemicals and other products.

The new unit, an outdoor type installation, will cover approximately two acres of land adjacent to the company's present production facilities at Bridgeville. (See photo on page 20.) Construction will get underway within three months. Completion and operation are scheduled for late next year.

Initial production capacity will be at the rate of 14,000,000 lb. annually. Expansion plans are being incorporated in the plant design to facilitate

(Turn to CYANAMID, page 20)

Cotton Legislation May Be Signal for End of High, Rigid Price Props

By JOHN CIPPERLY
Croplife Washington Correspondent

WASHINGTON—After a long period of disagreement the cotton industry appears willing to center its favorable attention on cotton acreage legislation at this session of Congress to remedy conditions which become effective for the 1959 crop.

Basically the cotton industry has conceded that it must accept lower prices and expanded acreage if the industry as a whole is to stave off bankrupty.

This information that the divided forces of the cotton economy have now joined ranks after months of controversial division has implications for the fertilizer and pesticidal chemical industries. It should provide them with basic material for the sales kits of its field men not only for this year but for the next crop. For once the fertilizer and pesticidal chemical industries sales forces can gear their sales efforts to a two year concept.

Here is what has taken place: The cotton industry is prepared to back legislation which will provide a basic cotton acreage allotment of 14 million acres from which a 30% excess of plantings will be permitted without penalty. The level of price support for such production—actually a potential 18 million acre base—would be 65 to 70% of parity.

At the same time Congress would be asked to end the use of the flexible sliding scale schedule of price support adjustments which now prevails as supply and demand relationships fluctuate.

This legislation would also provide that cotton farmers will on their own initiative have the choice of following the above pattern of production or remaining within the provisions of the existing law of a 17 million acre base and price support at 81% of parity, but without the flexible price support adjustment technique.

Either of these provisions would be applicable to the 1959-60-61 cotton crop years at the election of the individual farmer.

This means obviously lower price for cotton and heavier production. The lower price would follow, it is assumed, the lower levels of price support. In regard to production from farms which retain the present provisions of the Farm Act regarding cotton price supports and acreage, Commodity Credit Corp. would be instructed to sell cotton obtained from such production at 105% of

If Congress enacts this proposal —a probability since it carries

(Turn to COTTON, page 20)

Senators Request Change in ICC Laws on Farm Trucking

WASHINGTON — A recommendation for mild changes in the existing provision of the Interstate Commerce Commission Act regarding exemption of agricultural commodities by motor truck from ICC rate control has been made by a Senate subcommittee on interstate commerce. This appears to have reduced the threat of drastic limitations on that exemption at least for this session of Congress.

The agricultural haulers' exemption from ICC rate controls of farm commodities has become a matter of heated controversy as processed agricultural commodities claimed and obtained court approval that they also were eligible for the exemption. The expansion of the coverage of the exemption through court rulings, ICC claimed, was beyond the basic concept of Congress when it enacted the exemption originally.

In its request for amendment of their law, ICC officials had requested that the exemption be applied only up to the point where the farmer ceased to retain title or control over his farm commodity. That could hold down the exemption application in some instances back as far as the farm gate or the packing shed on a farm if the farm commodity were sold at those points.

It obviously would have applied to return loads made by distributors of fertilizer materials to farmers wherein the distributor's truck was hired to pick up a farm commodity for a buyer to bring back to a distribution or concentration point in interstate commerce.

Under the recommendations of

(Turn to ICC, page 20)

USDA Scientists Seek Specific Uses Of Chelated Metals as Plant Nutrients

WASHINGTON—Scientists of the U.S. Department of Agriculture and several states are finding out how growers can make specific use of chemically chelated metals to provide essential nutrients for fruit trees, ornamentals and other plants.

In some soils, organic substances form natural chelates (keelates) that keep soil-contained metals water-soluble so that plants can absorb them. Although many soils contain adequate quantities of nutrient metals, they often do not have sufficient natural chelates to make the metals soluble and available to plants.

Iron, combined with organic chemicals in the compounds known as chelates, is used frequently to treat chlorosis caused by iron deficiency, which results in yellowing of leaves and reduced production. This condition is common in many of the country's fruit-growing areas in which soils are deficient in iron or the iron is present in unavailable form. Commercial and experimental chelates have also been found useful in combating other conditions in fruit trees caused by lack of essential nutrient metals.

Providing iron and other metals in the form of chelates is the newest method of supplying plants with such nutrients. Once, fruit growers drove iron nails into the trunks of trees as production dropped off and growers thought the trees needed a "tonic."

This crude method was superseded

(Turn to CHELATES, page 20)

Inside You'll Find

Pesticides or Fertilizers? .. page 6
Eastern Farmers' Attitudes Toward Fertilizers ..... page 9
Over the Counter ..... page 9
What's New ..... page 10
Ringing the Cash Register.. page 11
Oscar and Pat ..... page 12
Farm Service Data ..... page 14
Weed of the Week ..... page 16
Editorials ..... page 22
Advertisers' Index ..... page 23
Meeting Memos ..... page 23

Shareholders Approve American Potash, Lindsay Merger

LOS ANGELES—Approval of the merger of Lindsay Chemical Co. into American Potash & Chemical Corp. has been voted April 29 by shareholders of both companies at meetings held in west Chicago and New York. Lindsay Chemical will be operated as the Lindsay Chemical Division of American Potash.

American Potash with sales of $42,637,213 in calendar 1957 produces a widely diversified line of more than 60 chemicals for industry, agriculture and national defense. Lindsay Chemical is a leading producer of thorium, yttrium and rare earth chemicals. Its sales in 1957 were $8,952,563.

Harold W. Hoffman

IMC APPOINTMENT—International Minerals & Chemical Corp. has appointed Harold W. Hoffman as an agricultural sales representative in its potash division's district sales office in Shreveport, La. In his new position Mr. Hoffman will be responsible for agricultural potash sales in Louisiana, Texas and Southern Mississippi. Since 1951 an assistant to the sales manager for Virginia-Carolina Chemical Corp. in Shreveport, Mr. Hoffman was a representative for Lockheed Aircraft Corp. in the U.K. from 1939 to 1945, and later was a port representative for the U.S. government in Amsterdam and Rotterdam, Holland. He studied chemical engineering at the University of Texas.

Washington Fertilizer Consumption Shows Increase in 1957

OLYMPIA, WASH. — Fertilizer sales in Washington during 1957 totaled 187,740 tons, an increase from 159,594 tons in 1956, the Washington State Department of Agriculture has reported. Mixed fertilizer sales last year amounted to 30,495 tons, compared with 24,530 tons a year earlier, while sales of materials in 1957 totaled 157,245 tons, a gain from 135,064 tons in 1956.

Leading mixed grades in tonnage last year were 10-20-20 with 3,404 tons, 6-10-4 with 3,239 tons, 5-10-10 with 2,971 tons and 6-20-20 with 1,655 tons.

Materials sales in 1957 included 113,857 tons of nitrogen material, 28,509 tons of phosphate material, 3,628 tons of potash material and 11,251 miscellaneous.

Sales of leading materials, with 1956 tonnage in parentheses, included: Aqua ammonia 45,395 tons (30,244), ammonium nitrate 23,941 (23,905), anhydrous ammonia 28,104 (19,367), ammonium sulphate 12,215 (12,221), 16-20 ammonium phosphate 10,199 (9,267), 11-48 ammonium phosphate 1,567 (2,042), 8-12 ammonium phosphate 668 (1,110), other ammonium phosphate 4,091 (2,769), treble superphosphate 6,163 (5,846), single superphosphate 4,811 (5,861), sulphate of potash 1,244 (292), muriate of potash 2,384 (2,630), liquid mixed fertilizer 8,578 (7,045), organic fertilizers 1,755 (1,688) and specialty fertilizers 918 (3,419).

Sales of agricultural minerals in 1957 totaled 14,759 tons, compared with 16,824 tons in 1956, and lime sales amounted to 11,244 tons last year, a decline from 22,602 tons in 1956.

NEW MEXICO SHIPMENTS

STATE COLLEGE, N.M. — Fertilizer shipments into New Mexico during the first three months of 1958 totaled 16,273 tons, the New Mexico State Department of Agriculture reports.

Diamond Alkali Co. Announces New Sales, Service Program

CLEVELAND—Diamond Alkali Co., Cleveland, Ohio, has announced a new, long-term sales and service program designed to broaden the company's competitive position as a producer and marketer of agricultural chemicals. Diamond operates agricultural chemical plants at Newark, N.J.; Des Moines, Iowa, and Greens Bayou, Texas.

In making this announcement, Loren P. Scoville, general manager of Diamond's chlorinated products division, which operates these three plants, said that "in this area of our business the company henceforth will concentrate its sales and technical service activities on Diamond 2,4-D and 2,4,5-T and their formulations, BHC, DDT, Lindane, miticide, hexachlorobenzene and grain fumigants."

L. J. Polite, Jr., sales manager of Diamond's chlorinated products division, is directing the expanded program, assisted by James O. King, recently appointed manager of agricultural chemical sales.

To carry out this new marketing and technical service program, Mr. Scoville further explained, six agricultural chemical specialists will now concentrate full-time effort on agricultural chemicals in conjunction with the company's branch sales offices and line salesmen.

Herman E. Meadows, a member of the division's technical service staff since December, 1956 and previously a Diamond sales representative in the southwest for four years, will spearhead the program in this area, covering Texas, Louisiana, Oklahoma, Kansas, Colorado, New Mexico and Arizona. He continues to make his headquarters at the company's Southwest branch sales office, 1006 Main St., Houston.

Elmer G. Osborne, engaged in various sales capacities in the agricultural chemical field for the past seven years, will represent Diamond in the Southeast, with headquarters at the company's southeastern branch sales office at 1381 Heistan Place, Memphis. His territory comprises Tennessee, Alabama, Georgia, North Carolina, South Carolina, Florida and Mississippi.

Northeastern representative is Harold A. Branson, who will cover New York, Massachusetts, Pennsylvania, Maryland, Connecticut, Maine, New Hampshire and Delaware. He will be located at Diamond's New York-New England branch sales office, 99 Park Ave., New York.

George A. Lawrence, Jr., and Edward R. Luoma will represent the company in the midwestern states of Michigan, Wisconsin, Minnesota, Iowa, Indiana, Illinois, North Dakota and South Dakota. Mr. Luoma will also cover Montana. Both men will make their headquarters at Diamond's Chicago branch sales office, 20 North Wacker Drive.

Bernard D. Clayton will represent Diamond on the Pacific Coast. His territory comprises California, Oregon, Washington, Nevada, Utah and Idaho. He will continue to make his headquarters at 1366 Bay Shore, San Jose, Cal.

Robert J. Orlik, assisting Mr. King at Diamond's national headquarters in Cleveland, will work directly with the company's branch offices at Cleveland, Pittsburgh, Cincinnati and St. Louis in covering West Virginia, Ohio, Kentucky, Missouri, and sections of Pennsylvania, New York, Illinois and Virginia.

TVA Contract

KNOXVILLE—Tennessee Valley Authority May 7 announced award of a $251,500 contract to American Chemical Paint Co. (now Agchem Products, Inc.), Ambler, Pa., for 2,4-D and 2,4,5-T acids.

Robert E. Sattler Joins Texas Co.

NEW YORK — Robert E. Sattler, formerly teaching assistant in the agronomy department of the University of Illinois, has been appointed a sales representative of the Texas Co.'s petrochemical sales division, according to G. E. Garland, division manager.

Mr. Sattler will call on fertilizer manufacturers, paper companies and other users of ammonia and nitrogen solutions in Wisconsin and Minnesota. His headquarters, however, will be in Texaco's regional sales office in the McCormick Bldg., Chicago.

Mr. Sattler was born in Danville, Ill., and was graduated from the University of Illinois with a B.S. degree, and after serving with the armed forces he returned there and secured a master's degree in agronomy.

California Seeks Federal Help to Fight Mosquito Outbreak

SACRAMENTO—By joint resolution of the two houses of the California Legislature, the federal office of civil defense has been asked to make funds available to prevent a threatened encephalitis epidemic in the state.

The author of the resolution, Assemblyman Gordon Winton of Merced County, said that thousands of acres in the Sacramento and San Joaquin Valleys were still under water as a result of heavy spring rains, creating a severe mosquito breeding problem.

Mr. Winton said the California Department of Public Health estimated that at least $300,000 would be needed to spray mosquito breeding areas. Unless this is done, the legislator said, there will be a sharp increase in the number of culex tarsalis type mosquitoes, carriers of human and animal encephalitis.

Meanwhile, George Umberger, director of the Sacramento-Yolo Mosquito Abatement District, has announced he will apply to the federal government for approximately $30,000 to aid in combating mosquito control problems created by last month's flooding in the district.

Mr. Umberger said he had been informed that the district is eligible for aid and the request will be made through the state disaster office.

Liquid Warehousing Facility Started in Memphis

MEMPHIS—A liquid warehousing facility has been started on an 11 acre site on President's Island in Memphis Harbor by Memphis Mixed Products Terminal. Tanks already have been built for the storage and dispensation of liquid fertilizer and petroleum jelly.

J. Larry Johnson, president of the firm, said that the new facility will be used as an accumulation or distribution point, or both. Rail, barge and truck line services, in-bound and out-bound, are available to the tanks, and the site has its own dock for Mississippi River barges, he said.

The average tank to be built will accommodate 600,000 gallons of liquid. Tanks are being made available to distributors, manufacturers and shippers on a lease basis. Since different products require different tank specifications, the tanks are being built as contracts for their use are negotiated, Mr. Johnson said.

GARDEN CENTERS EXPAND

DENVER, COLO.—Evergreen Garden Centers, 2235 S. Broadway, has expanded to eight branches. The garden supply firm, owned by Ed Chaffin, and headquartering here, merchandises nursery stock, garden seeds, fertilizers, insecticides and patio furniture.

Omar L. Patton

TO SALES TRAINING POST—Omar L. Patton of Hamilton, Ohio, has been appointed assistant manager of sales training, agricultural division, American Cyanamid Co., B. F. Bowman, divisional director of marketing, has announced. Mr. Patton, who will assist E. F. Loats, manager of sales training, was formerly a district sales manager located in Ft. Wayne, Ind.

Special Mosquito, Fly Control Campaign Slated in New Mexico

SANTA FE, N.M. — Insecticides will be in demand this year in northern New Mexico as a result of this season's unusually generous rainfall, says William Cortez, district sanitarian for the New Mexico Health Department.

"We have already found that the mosquito population in New Mexico is on the increase, and the more rain we have the more mosquitoes we can expect," Mr. Cortez said.

He noted that a special mosquito and fly control program will begin May 15 in Santa Fe with spraying slated every two weeks until October. The city will provide the insecticide and the Health Department will provide trucks and large-scale spraying equipment. Similar insect control programs are being planned by Taos and Rio Arriba counties.

Community programs will not cover ranches, resorts and other isolated areas, however, and officials are fearful that—after eight years of drouth—many citizens may be slow in starting individual spraying programs.

Mr. Cortez noted that mosquitoes are carriers of the virus that causes encephalitis, or "sleeping sickness," and pointed out that this disease caused six deaths in the state last year, including one in Taos County. The long drouth in the state began to break last summer. About 60 cases of encephalitis were reported in horses last year, compared with only five cases in 1956.

Simazine 50W Now Available to Corn Growers

ARDSLEY, N.Y. — Geigy Agricultural Chemicals has announced that its Simazine 50W has now been released for weed control in corn.

Geigy scientists said that more than 400 research cooperators have field tested the herbicide and "grasses and broad-leafed weeds have virtually been eliminated from corn for the entire growing season from one application at only 4 lb. per acre. Only 2 lb. are required on light sandy soils, and 6 lb. should be used on heavy clay soils."

The herbicide is applied at planting time as a "pre-emergence" spray either as a band treatment over the rows or as an over-all application.

Progress Report

POTASH COMPANY OF AMERICA, LTD.

P.C.A.'s initial installation in the province of Saskatchewan will be considerably larger than any other Canadian installation whose plan has been announced.

Meanwhile our Carlsbad Plant can serve your entire POTASH requirements with the very best material.

New 60% Standard Muriate
New 60% Special Granular Muriate
New 60% Coarse Granular Muriate
Sulphate of Potash
Chemical Muriate — 99.9% KCL minimum

P.C.A.
"The SALT of the EARTH"
RED MURIATE

Quick Service—High Quality
Phone, write, telex, or wire us
Phone STerling 3-4990, Washington
TWX No.—WA-331

POTASH COMPANY OF AMERICA
CARLSBAD, NEW MEXICO.

General Sales Office . . . 1625 Eye Street, N.W., Washington, D.C.
Midwestern Sales Office . . . First National Bank Bldg., Peoria, Ill.
Southern Sales Office . . . Candler Building, Atlanta, Ga.

INSECT, PLANT DISEASE NOTES

Imported Fire Ant Infestations Reported On 4 Million Acres of Louisiana Lands

BATON ROUGE, LA.—Imported fire ant infestations have been located on a total of 4 million acres in 39 Louisiana parishes, according to Kirby L. Cockerham, entomologist with the Louisiana State University agricultural extension service. The statistics are based on reports from entomologists and others working on the fire ant control campaign now under way in the state.

Parishes with more than 100,000 acres infested include Washington, St. Tammany, Orleans, St. Bernard, Jefferson, Livingston, St. Mary, St. Martin, Iberia, Vermilion, Lafayette and St. Landry. Those with 30,000 to 100,000 acres infested are Tangipahoa, East Baton Rouge, West Baton Rouge, Iberville, Ascension, St. John, Evangeline, Acadia and Calcasieu. Ouachita, Avoyelles, Pointe Coupee and Plaquemines parishes have 5,000 to 30,000 acres each infested.

Caddo, Bienville, Richland, Madison, Concordia, Rapides, Beauregard, West Feliciana, East Feliciana, St. Helena, Assumption, Lafourche and Terrebonne all have infestations under 5,000 acres.

No ants were found during surveys of Union, Lincoln, LaSalle, Natchitoches, Sabine, Vernon, Allen, Jefferson Davis and Cameron parishes.

Eradication campaigns now are under way in a number of parishes. The most recently compiled figures show that 4,565 acres had been treated in Acadia, 60 in Avoyelles, 43 in Beauregard, 1,357 in Caddo, 4 in Jefferson, 3,333 in Ouachita, 792 in Rapides, 5,678 in St. Landry, and 1,544 in Tangipahoa.

Blocks covering another 38,000 acres have been lined up for treatment in Acadia, Ascension, Lafayette, St. Landry, St. Martin, St. Tammany, Ouachita, Tangipahoa, and West Baton Rouge.

Insecticide is being spread by planes and by turbine blowers mounted on jeeps. Five planes are under contract for fire ant extermination work and 15 turbine blowers are available. New blocks of land are being signed up for treatment as rapidly as possible, Mr. Cockerham says. Rainy weather this spring delayed the campaign.

No Khapra Beetles Found in Oregon Survey

SALEM, ORE.—Oregon's Department of Agriculture is nearing completion of its 1958 survey work for two important pests, the Khapra beetle and holly leaf miner. No Khapra beetles were found in 124 mills inspected in the first four months of 1958, according to F. O. Larson, entomologist who heads the department's pest survey program.

Surveys to date for holly leaf miner show that infested areas have increased in intensity, but there is no appreciable spread. It has not been found in any large commercial orchards. Holly leaf miner infestations have been found in Portland, Astoria and as far south as the northern edge of Gladstone, Ore.

Missouri Insects Causing Little Damage at Present

COLUMBIA, MO.—At the moment, we have fewer insects causing trouble than during any of the past several springs. Pea aphids are present in low numbers in some alfalfa fields, but the number of beneficial insects is increasing rapidly, and there seems little chance of wide-spread damage developing.

Spotted alfalfa aphids are extremely scarce, and as long as we continue to have adequate moisture they are apt to stay scarce.

There are some clover leaf weevil grubs in both alfalfa and clover, but the legumes are growing away from them, and fungus disease is hitting them hard. During most years, this disease keeps the weevil grubs under control.

It's still too early to say definitely, but all indications are that we will not have much armyworm trouble this year. The moths are still flying, but so far the flight has been light. However, we are finding some cutworms, primarily in legumes. So far control is not needed, but farmers should be on the watch for cutworms in corn.

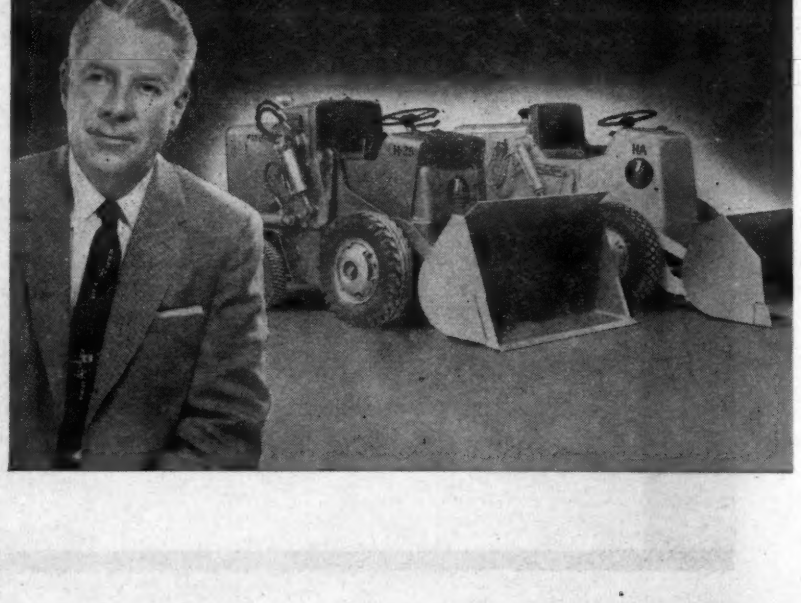
We are also finding some English grain aphids in small grains. Spraying is not needed yet, and it may not be needed later, but trouble could develop about the time the grain begins to head.

Questions have come in on the use of soil insecticides on corn land. From the type of a spring we've had so far, it looks as though this is a good year to use an insecticide. If a person doesn't use a soil application, he should at least use a seed treatment. This will protect the seed from seed corn maggot and seed corn beetles, and from light infestations of wireworms. For protection against all soil insects, the soil application must be used.—Stirling Kyd and George W. Thomas.

Alfalfa Weevil Found In Georgia Fields

ATHENS, GA.—Alfalfa weevil, heretofore not found in Georgia, was discovered recently in Lincoln, Wilkes, Hart, Oglethorpe and Clarke counties. Infestations ranging from light to heavy were found in all alfalfa fields surveyed in these counties. It is likely that infestations are present in a number of other counties in this area and possibly in other sections of the state, according to

Report on the All-New Model H-25 PAYLOADER®



by G. A. Gilbertson,
President of The Frank G. Hough Co.

Recently I had the pleasure of personally delivering the 10,000th production model HA "PAYLOADER" to our distributor in the metropolitan Chicago area.

Because our company pioneered the first unit-designed, rubber-tired front-end loader and because this quantity of 10,000 of a single model is more than all other manufacturers combined have produced, we were justifiably proud of our accomplishment and the acceptance of our product by industry.

Inasmuch as we anticipate a continued demand for this model HA, we plan to continue its production, even though we are now introducing a completely new machine, the model H-25.

More "Payloader" Pioneering

This new H-25 "PAYLOADER" is in a class by itself as far as capacity, productive ability and features are concerned. It is a quality machine in *every* sense of the word.

While it will be priced higher than the model HA, and units competitive to that model, it will be a profitable investment, since it can handle materials at a *lower cost per yard* and that, in the final analysis, is *most important* to the user.

In this connection, your Hough Distributor has available the broadest and most complete set of financing plans offered: time payment and leasing plans, with or without option to purchase . . . any and all kinds of financing to best fit your needs.

What is so different about the new H-25?

More Capacity and Maneuverability

In terms of capacity alone, it is in a class by itself . . . the only machine with a *carry capacity* of 2,500 lbs., at average operating speeds of 4 m.p.h.

With a bigger and heavier unit having more capacity, it would be logical to expect you would need more room to operate. On the contrary, not only can this new H-25 negotiate 6-foot box car doors with ease . . . it actually has a turning radius (measured to the outside rear hub) which is LESS than ANY other rubber-tired tractor-shovel.

How Important is Carry Capacity?

How much a loader can handle and move depends on the *carry capacity* . . . not on the static lifting capacity. The proper size of the bucket for any loader depends on the *average weight* of the material to be handled *in relation* to the machine's *carry capacity.*

Thus, with the H-25 "PAYLOADER" if you want to handle the maximum load of material weighing 125 lbs. per cubic foot, you can use a bucket with an S.A.E. rated capacity of 20 cu. ft. and move loads of 2,500 lbs., which is the carry capacity of the unit.

If you consistently handle heavier materials, you should use a smaller bucket or if you handle nothing but lighter loads, you can use a bigger bucket. The *important* thing is to stay within the recommended carry capacity.

The H-25 Has Extra "built-in" Strength

Regardless of its size and recommended capacity, some operators will always push equipment to extremes. This abuse will inevitably result in extra maintenance and even failure. That is why we have engineered extra strength and stamina throughout the H-25 . . . for your protection.

What About Individual Features?

There are dozens of them! The new power-shift transmission and a new torque-converter are matched

C. R. Jordan, extension entomologist and project leader.

After careful study, at least four entomologists of the division of entomology agree that this insect is the alfalfa weevil. Specimens have been sent to Washington, however, for positive identification. "We will proceed with the assumption that our identification is correct, pending confirmation from Washington," Mr. Jordan says.

The alfalfa weevil has been a serious pest of alfalfa in the west for 50 years. Between 1952 and 1955, it spread to eight eastern states. Lincoln County agent G. H. McGee gets the credit for being the first person in Georgia to find and submit specimens of this pest.

The adult weevil has a snout and is about 3/16 of an inch long. It is light brown when newly emerged but later turns dark brown or almost black. The larvae, however, cause most of the damage by feeding on the leaves and buds of alfalfa. Heavy infestations cause the plants to have a lacy appearance and make the field look as if it had suffered severe frost damage. Close inspection is necessary, however, to spot light infestations, the entomologists told farmers.

Apple Scab Control Time Critical in Massachusetts

AMHERST, MASS. — (May 6) — This is a critical time for apple scab control. The flower buds are in the pink stage with flower stems and base of fruits exposed to infection. Heavy rains wash off protection and trees produce growth without protection in 3-5 days. A tight spray program for each rain is in order.

Scab control rather than insects or mites should be the primary concern during this rainy period just before bloom. It is also a critical time for fruit finish since russeting is more likely to occur when spraying under conditions of poor drying and lower temperatures. Especially, avoid using phosphates under such conditions and do not combine mercury and a phosphate.

Vegetable growers are reminded again that eggs of cabbage maggot were found last week. The flies will continue egg laying for three weeks. All cabbage, cauliflower, broccoli and radish plants or seedlings should be protected now. The wet season is favorable for cutworms and certain other soil insects such as seed maggots.—C. J. Gilgut and E. H. Wheeler.

Numerous Varieties of Insects in New Mexico

STATE COLLEGE, N.M.—Spotted alfalfa aphid (Therioaphis maculata) have become severe enough to warrant control in alfalfa fields in Dona Ana and Eddy counties. Winged forms becoming very numerous.

Moderate infestations of cutworms in alfalfa fields near Hagerman and Dexter, Chaves County, have been reported. Cowpea aphid (Aphis medicaginis) are in moderate infestation on alfalfa at Ft. Sumner, DeBaca County.

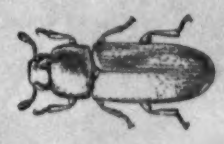
Lygus bugs (Lygus spp.) are very abundant in some alfalfa fields in Dona Ana and Sierra counties. A field near Arrey, Sierra County, averaged 1 adult and 2 nymphs per sweep. Pea aphid (Macrosiphum pisi) is light to moderate in alfalfa fields in southern counties. Populations building up rapidly.

Cabbage looper's (Trichoplusia ni) eggs and larvae are abundant in lettuce fields which have not been dusted in Eddy and Dona Ana counties. Cutworm eggs are light on lettuce near Artesia, Eddy County.

Leafhopper (Empoasca spp.) are in moderate infestation on lettuce in Eddy and Dona Ana counties, and are causing some stippling of leaves.

Heavy infestations of white grubs in lawns at Las Cruces, Dona Ana County, and artichoke plume moth (Platyotilia carduidactyla) is damaging artichokes at Mesilla Park, Dona Ana County.

Heavy infestations of adults and nymphs of leafhoppers on elm trees at Las Cruces, Dona Ana County. Mosquitoes are abundant and annoying at Truth or Consequences, Sierra County.—John J. Durkin.



Insect Actvity Light in Kansas

MANHATTAN, KANSAS — No spotted alfalfa aphids were found in the northern half of the state this week. Pea aphids have been found in alfalfa fields except northwest counties but have not reached large enough numbers to require control measures. Army cutworms damaging alfalfa have been found only in Rawlins County.

No pale western cutworms or damaged wheat plants were found in northwest Kansas. Aphids in wheat have been identified as English grain aphids rather than greenbugs. Armyworm moths have been taken from the light trap in Manhattan for the past two weeks. One larva was taken from wheat in Osborne County this week. Conditions are very favorable for armyworm damage to barley and wheat this spring. Field damage usually starts about May 15.

Chinch bugs were found in large numbers in a field of small barley in Douglas County this week. The overwintering populations indicate plenty of problems with chinch bugs this year. A few grasshoppers were found on range in northwest counties this week. The hatch along fields and fence rows can be expected with warmer weather.—David L. Matthew and Dell E. Gates.

Orchard Pest Populations Light in Indiana

VINCENNES, IND.—Insect activity continues to be light in both apple and peach orchards. First-brood egg masses of red-banded leaf roller began to hatch May 2, but no emergence of spring brood adult codling moths to date.

Adult populations of plum curculio in unsprayed orchards are increasing. 53 adults were bumped from 5 trees on May 5. Populations in sprayed orchards are very light. First egg laying puncture on peach was observed May 5. Spray protection is needed in both apple and peach orchards.

Oriental fruit moth spring brood adults began coming to bait traps May 1. Egg laying can be expected

(Turn to INSECT NOTES, page 17)

to give the ultimate in speed and ease of operation. The H-25 has a two-speed, full-reversing transmission. Power-steering adds to handling ease.

This new "PAYLOADER" is equipped with sealed, self-adjusting brakes and is the only unit of this class offering this important feature.

The H-25 has a maximum dumping height that is 6½ inches higher than the average of other loaders now being offered in this general capacity range.

This new unit is powered by a 44 HP gasoline engine with overhead valves for better performance and wet sleeves for easier maintenance. LPG (liquified petroleum gas) and diesel power are available.

Dig-ability?

When it comes to digging power, the H-25 gives you 4,500 lbs. of breakout force and, like other "PAYLOADER" front-end loaders, provides a bucket tip-back of 40 degrees, *at ground level!* As the bucket raises, a further tip-back to 65 degrees helps retain maximum loads.

Protective Features

If you are concerned with dust and dirt like most chemical, fertilizer and foundry operators are, you will appreciate the extra protective features engineered into the H-25. For example, the engine is afforded maximum protection with triple air cleaners — a precleaner and dual oil-bath air cleaners.

This "PAYLOADER" has a filtered hydraulic system. The oil reservoir is a closed, pressure-control type, electrically welded.

The sealing of the majority of all pivot points reduces maintenance. Transmission and torque-converter oil is cooled by the engine radiator cooling system.

Other Features

This new H-25 is equipped with high-traction differential which automatically transfers more torque to the drive wheel with the best footing when slippage is encountered.

The fuel tank has sufficient capacity for eight full hours of operation, thereby eliminating the need for refueling during any shift.

The H-25 is equipped with a 12-volt electrical system. In addition to the usual standard equipment that includes fuel gage, oil-pressure gage and engine temperature gage, there is also a torque-converter temperature gage and an Hourmeter.

There are many, many more features which we think you will be interested in. The many interchangeable attachments now available for the model HA "PAYLOADER" can also be used on the new H-25. Contact your "PAYLOADER" distributor or write us direct for literature and specifications. The Frank G. Hough Co., 970 Sunnyside Ave., Libertyville, Ill.

5-A-1

Modern Materials Handling Equipment
THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS
SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY

The H-25 "PAYLOADER" will be shown at both the FOUNDRY SHOW in Cleveland, May 19-23 and the NATIONAL MATERIALS HANDLING SHOW also in Cleveland, June 9-12, 1958.

FERTILIZER OR PESTICIDE?

New Chemical Products Pose Problems of Classification For State Control Officials

By Robert Z. Rollins*

Chief, Bureau of Chemistry
State Department of Agriculture
Sacramento, California

YEARS ago there were fertilizers and there were pesticides. The two kinds of materials were quite different and there was no confusion between them. Now, there are mixtures of fertilizers with pesticides. There are fertilizers with some incidental pesticidal values as well as pesticides with some incidental fertilizer values. There are materials that simultaneously act as fertilizers as well as pesticides. There are materials that are used in certain ways on certain crops as fertilizers and used in other ways on other crops as pesticides.

To complicate the problem, a number of new chemicals have been developed to affect soils, plants, and crops in ways undreamed of in earlier years. The concepts of what constitutes a fertilizer and what constitutes a pesticide have expanded with the developments in agricultural chemistry since the war. The two fields have grown together and overlapped to such an extent that it is sometimes difficult to classify some of the new products that appear on the scene.

Fertilizers

Originally, fertilizing materials were those that supplied the major plant nutrients—nitrogen, phosphorus, and potassium. Later, calcium, magnesium, and sulfur were included, and now the micronutrients copper, manganese, zinc, iron, boron, and molybdenum. Fertilizers were regarded as something applied to the soil to feed the plant.

Then a number of other developments began to broaden the field of fertilizing materials. It was found that some of the micronutrients, and more recently even some of the major plant foods, could be applied effectively as foliage sprays by the same equipment and in the same manner that pesticides are applied.

Pesticides

Similarly, years ago, pesticides were materials that killed insects, fungi, weeds, rodents, and other undesirable organisms. Some pesticides began to be applied in the same way that fertilizing materials are applied, for example, to the furrows when planting seed, or injected into the soil.

Some systemic pesticides were found that were absorbed by plants, just as they absorb nutrients, and thereby control pests. Thus, we have fertilizers applied in the same way as pesticides have been applied, and pesticides applied as fertilizers have been applied.

Fertilizer-Pesticide Mixtures

Inasmuch as both kinds of materials could be applied in the same ways, the next step was the development of mixtures of fertilizers with pesticides so that one application of the mixture, as a spray, or a dust, or applied to the soil, served two purposes in feeding the plant and protecting it from pests. Although such mixtures make a combination fertilizer-pesticide, they do not present any difficulty in registration, labeling, and sale. It seems clear and reasonable that such combination products intended to serve two purposes, should be labeled with two statements of composition, one showing the fertilizer guarantee and one showing the pesticide guarantee. There appeared to be no doubt but they should be registered and sold in compliance with the requirements of the two laws governing the two types of products.

Multi-Purpose Materials

A further complication arises with materials that serve a dual purpose, or serve several purposes, either separately or simultaneously. There were some dual-purpose materials even years ago. For example, calcium cyanamide, widely sold as a commercial fertilizer, was also used as a pesticide to control weeds and certain soil organisms.

Lime-sulfur solution, widely used as a pesticide, was also used for treatment of alkaline soils. Bluestone was used as a pesticide to make bordeaux mixture and was also applied to the soil as a plant nutrient to correct shortages of copper in the soil. Large amounts of elemental sulfur were applied to plants to kill pests and large amounts were applied to soil to reduce alkalinity.

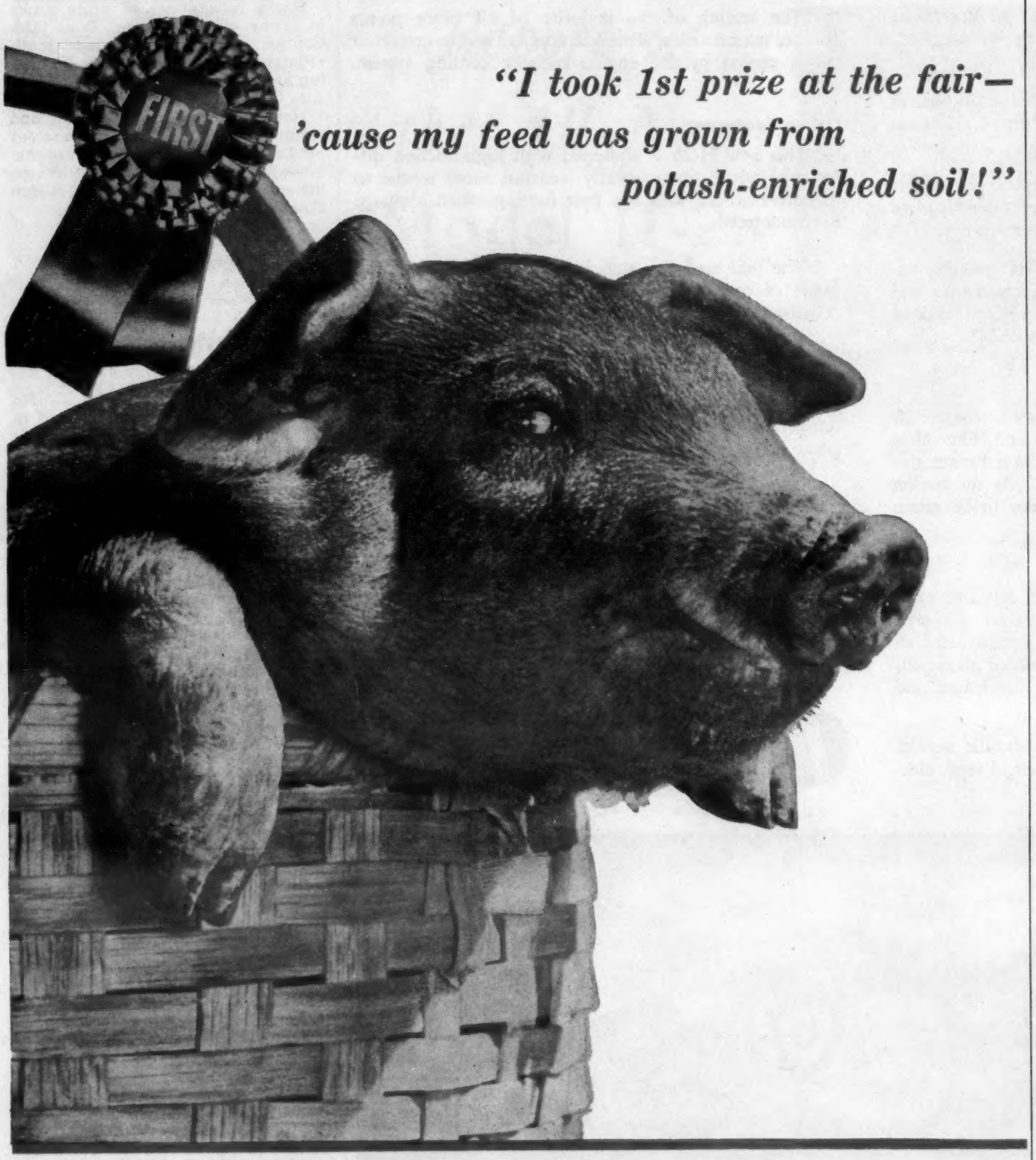
Many more of these multi-purpose materials have been developed. For example, the same formulations of 2,4-D or 2,4,5-T used to kill weeds are also used to reduce fruit drop on citrus to keep the "buttons" on harvested lemon fruits, to promote a desirable red coloration of apricots, and there have been some reports that certain uses of these compounds may increase the crop yield of some plants.

Maleic hydrazide is used for control of weeds and also to reduce the sprouting of potatoes. Certain metallic carbamates have nutritional values, for example, maneb not only provides control of certain fungi, but it is reported to alleviate deficiencies of the plant food manganese.

There have been reports that certain fertilizing materials may have indirect pesticidal value. For example, certain metal chelates applied for correction of a nutritional deficiency, have seemed to inhibit development of mites on the plant. Some soil fumigants give plant responses beyond what can be attributed to pest control.

To add to the confusion, a farmer might use either a fertilizer or a pesticide for a certain need. For ex-

*Presented at the Sixth California Fertilizer Conference, California State Polytechnic College, San Luis Obispo, April 14, 1958.



"I took 1st prize at the fair—
'cause my feed was grown from
potash-enriched soil!"

ATTENTION FERTILIZER MANUFACTURERS: USP offers *3* outstanding grades of potash—designed to meet your highest requirements. USP's Higran, the new specially-sized white granular (62/63% K_2O), and Higrade muriate (also 62/63% K_2O)—the 2 purest agricultural muriates now available. *And* USP's Granular muriate (60% K_2O). All three are non-caking and free-flowing throughout.

Our Technical Service Department welcomes your inquiries.

UNITED STATES POTASH COMPANY
DIVISION OF UNITED STATES BORAX & CHEMICAL CORPORATION
50 Rockefeller Plaza, New York 20, New York
Southern Sales Office: Rhodes-Haverty Building, Atlanta, Georgia

SUNSHINE STATE POTASH — PRODUCT OF NEW MEXICO U.S.A.
REG. U. S. PAT. OFF.

MEMBER: AMERICAN POTASH INSTITUTE

ample, if his trees are suffering from a copper deficiency, he might correct it by applying bordeaux mixture, a pesticide, or by applying copper chelate, copper frits, or copper sulfate, all fertilizing materials.

New Kinds of Chemicals

The tremendous developments in agricultural chemistry are providing dozens of new compounds to affect soils, and plants, and crops in new ways. They do not kill pests and they do not feed plants as "classical" pesticides and fertilizers do, and still they are like these two kinds of materials. They are purchased from the same dealers and applied in the same ways.

Some of them seem to be closely related to fertilizers because they make plants grow better or they produce desirable changes in crops or soils, for example:

Indolebutyric acid, naphthalene acetic acid, naphthalene acetamide, and phenylacetic acid, to promote rooting of cuttings.

Inoculants of nitrogen-fixing bacteria for legume plantings.

Carbon dioxide injected into irrigation water to acidify alkaline soils.

Alkyl aryl-sulfates or sulfonates and similar wetting agents to improve penetration of the soil by irrigation water.

Polyelectrolytes, enzymes, plant extracts, and lignin preparations to improve the texture of compact and difficult soils.

Parachlorophenoxyacetic acid to improve set of tomatoes and berries, and to produce parthenocarpic fruits of Calimyrna figs.

Parachlorophenoxyacetic acid and benzole 2-oxyacetic acid to increase the size of Thomson seedless grapes.

2,4-Dichlorophenoxyacetic acid, 2,4,5-trichlorophenoxyacetic acid, and naphthalene acetic acid to increase the size of citrus fruits and to reduce excessive drop of deciduous fruits.

2,4-Dichlorophenoxyacetic acid to increase the yield of latex from rubber trees.

Ethylene chlorohydrin to break dormancy in potatoes.

Maleic hydrazide on potato plants and methyl ester of naphthaleneacetic acid on the tubers to prolong dormancy in potatoes and to prevent sprouting.

Tri-iodobenzoic acid to promote flowering in pineapples.

Allantoin to promote healing of pruning cuts on trees.

Gibberellic acid to make plants grow taller or more rapidly.

Maleic hydrazide to make plants grow more slowly.

2,4-Dichlorophenoxyacetic acid to promote coloration of potatoes and apricots.

2,4,5-Trichlorophenoxyacetic acid to delay coloration of lemons.

N-meta-tolyl phthalamic acid to increase flowers and prevent fruit drop on certain crops, for example, on cotton to increase lint and seed production.

Vitamin B_1 to aid in overcoming the shock of transplanting ornamentals.

Naphthaleneacetic acid and 2,4,5-trichlorophenoxy propionic acid to reduce pre-harvest drop of apples and to improve color of the fruit.

Naphthyl acetamide to promote rooting of cuttings, to aid in transplanting plants, and to increase the set of tomatoes.

Some of the new materials seem more closely related to pesticides because they kill a pest or at least part of a plant, for example:

Sodium chlorate, calcium cyanamide, pentachlorophenol, sodium ethyl xanthate, tributyl phosphorotrithioite, and many other compounds to defoliate cotton plants at harvest time to faciliate picking.

Dinitro-o-secondary butyl phenol, pentachlorophenol, disodium, 3,6-endoxo-hexahydro phthalate, and other compounds to desiccate legume seed crops at harvest time to improve harvest of the seed.

Sodium chlorate and sodium chloroacetate to desiccate rice and milo at harvest time to improve the crop and promote drying.

Sodium arsenite to kill tops of potato plants at harvest time.

Dinitrocresol and naphthyl acetamide, and dinitroortho-secondary butyl phenol to kill blossoms on trees grown as ornamentals where no fruit is wanted and to reduce fruit set on apple and peach trees.

Bacillus popillae (milky disease) for control of Japanese beetle and B. thuringiensis for control of alfalfa caterpillar.

Viruses for control of rats and rabbits.

Sometimes a chemical acts in an indirect way or in an unknown way to produce a beneficial effect. Elemental sulfur applied to the soil does not appear to provide any direct fungicidal control of scab on potatoes but in acidifying the soil it provides an environment that is not favorable for development of scab.

It was known for a number of years that applications of zinc compounds corrected mottle leaf on citrus even though it was not known at that time whether the disturbance was caused by a fungus or by a nutritional deficiency. There have been many reports of experiments wherein fungicides increased yields in experimental plots that could not be accounted for by the disease control observed. It is not clear whether they may have controlled some pest or contributed to the nutrition of the plant either directly or through some action on soil micro-organisms.

Chemicals were applied for control of such things as monkey face on olives, black heart on celery, and psorosis on citrus trees before the experts had agreed upon the cause of the trouble.

There is another group of products still further out on the fringe of agricultural chemicals which are probably not in the scope of any of the present laws. These include:

Zineb for protection of plants from damage by smog.

Preservations for cut flowers.

Colorants for flowers and lawns.

Wax and oil sprays and dips to improve the appearance of vegetables and ornamental foliage and to inhibit loss of moisture when transplanting nursery stock.

Anti-oxidants to prevent discoloration of the cut butts of asparagus and lettuce.

Ethylene oxide and other fumigants to promote coloration of harvested fruits.

Bacterial cultures to promote decomposition of crop residues and assist in reworking fields after harvest.

Some of these chemicals are just in the experimental phase or are marketed only in the small-package trade for garden use, but many of them are important in California agriculture where their wide-scale

(Turn to REGISTRATION, page 18)

NOW

Espesol 5 Registered For Labeling Purposes As A XYLENE-BASE SOLVENT

Formulator-proven as an economical, non-phytotoxic diluent with dependable uniformity!

Now registered as a xylene-base solvent, Espesol 5 meets all the demands of formulators who require an economical water-white, xylene-base diluent possessing absolute uniformity. Being a direct unit-produced, rather than a blended product, Espesol 5 provides you with (1) a constant weight (pounds per gallon) (2) uniform flash point (3) consistent aromatic content. With its narrow boiling range, Espesol 5 offers a fast evaporation rate and its high percentage of aromatics provides high solvency power.

Approved by government and college experiment and extension facilities, Espesol 5 is a premium quality, high specification diluent that will let you offer your customers a premium product. Available to you on short notice from all of Eastern States' terminal facilities, Espesol 5 can be ordered in drum, transport, tank car, barge and ship tank lots,

Mail coupon below for complete information.

EASTERN STATES PETROLEUM & CHEMICAL Corporation

(Formerly Eastern States Chemical Corporation)
P. O. Box 5008, Houston 12, Texas, Phone WAlnut 3-1651
Chicago Office: 1011 Lake Street, Oak Park, Ill., Phone Village 8-5410
New York Office: 10 Rockefeller Plaza, New York, N.Y., Phone Circle 7-2520
Cleveland Office: 20800 Center Ridge Road, Phone Edison 3-0188

ESPECO

Eastern States Petroleum & Chemical Corporation
P. O. Box 5008, Dept. CL-5A-8, Houston 12, Texas

Please send me free booklet on the characteristics and properties of insecticide solvents.

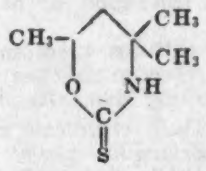
NAME_____
FIRM_____
ADDRESS_____
CITY_____ ZONE____ STATE_____

U. S. TERMINALS: Houston, Texas Chicago, Illinois East Liverpool, Ohio Madison, Indiana Brownsville, Texas
EUROPEAN TERMINALS: Dordrecht (Rotterdam), Netherlands Antwerp, Belgium Ludwigshafen, Germany Livorno (Leghorn), Italy

Industry Patents and Trademarks

2,832,680

Method of Defoliating Plants. Patent issued April 29, 1958, to Alvaro M. Goenaga, New York, assignor to Diamond Alkali Co., Cleveland, Ohio. The method of defoliating a plant, said method comprising treating said plant with a composition comprising a finely-divided carrier, a wetting agent, and in a defoliating amount, the compound having the formula:



2,832,714

Rodent Repellent Methods and Compositions Employing Naphthenyl Amines. Patent issued April 29, 1958, to Samuel E. Jolly, Ridley Park, Pa., assignor to Sun Oil Co., Philadelphia. Method for protecting materials normally subject to attack by rodents which comprises: applying to said materials a rodent repellent composition selected from the group consisting of naphthenyl amines and acid salts thereof, said composition being present in a rodent repellent concentration.

2,832,715

Rodent Repellent Methods and Compositions Employing Imidazoles. Patent issued April 29, 1958, to James L. Jezl, Swarthmore, and Samuel E. Jolly, Ridley Park, Pa., assignors to Sun Oil Co., Philadelphia, Pa. Method for protecting materials normally subject to attack by rodents which comprises: applying to said materials a rodent repellent composition selected from the group consisting of 2-naphthenyl imidazolines and 2-naphthenyl benzimidazoles and acid salts thereof, said composition being present in a rodent repellent concentration.

2,832,716

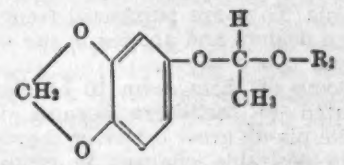
Acaricidal Composition of a Chloro-Alkyl Aryl Oxyalkyl Sulfite with a Dry Inert Powdered Carrier Stabilized with a Propylene Glycol. Patent issued April 29, 1958, to Carroll C. Cassil, Berkeley, and Jerome Yaffe, El Cerrito, Cal., assignors to Food Machinery and Chemical Corp., San Jose. An acaricidal composition containing a dry inert powdered carrier diluent and beta-chloroethyl-beta(p-tertbutylphenoxy)alpha-methyl ethyl sulfite as active ingredient and 0.1% to 10% of a propylene glycol as a stabilizer for the active ingredient.

2,832,782

Antifungal Agent. Patent issued April 29, 1958, to Joseph T. Alberi, Red Lodge, Mont., assignor to Bristol Laboratories, Inc., Syracuse, N.Y. A compound selected from the group consisting of orotic acid hydrazide and acid addition salts of orotic acid hydrazide.

2,832,792

3,4-Methylenedioxyphenyl Acetals as Synergists for Pyrethrins. Patent issued April 29, 1958, to Morton Beroza, Greenbelt, Md., assignor to the United States of America as represented by the Secretary of Agriculture. A process of preparing a compound of the formula



in which R_2 is a member selected from the group consisting of an alkyl radical containing 2 to 8 carbon atoms, alkoxyethyl and alkoxyethoxyethyl radicals wherein the alkoxy group contains 1 to 4 carbon atoms, and a chloroethyl radical, comprising reacting the corresponding vinyl ether with sesamol in the presence of a mineral acid catalyst.

2,832,810

Separation of Mercury from Sulfuric Acid. Patent issued April 29, 1958, to Edwin M. Smolin, Stamford, Conn., assignor to American Cyanamid Co., New York. A method of removing mercury from a spent sulfuric acid recovered from organic synthesis employing a catalyst of at least 85% H_2SO_4 content having finely divided mercury dispersed therein which comprises stripping the mercury from said catalyst with superheated steam.

Industry Trade Marks

The following trade marks were published in the Official Gazette of the U.S. Patent Office in compliance with section 12 (a) of the Trademark Act of 1946. Notice of opposition under section 13 may be filed within 30 days of publication in the Gazette. (See Rules 20.1 to 20.5.) As provided by Section 31 of the act, a fee of $25 must accompany each notice of opposition.

Sheen, in capital letters, for foliage spray. Filed April 12, 1957, by Diamond Black Leaf Co., Cleveland, Ohio, to Diamond Alkali Co., Cleveland. First use Feb. 27, 1957.

Polycide 26, in capital letters, for garden and horticultural fungicide. Filed July 10, 1957, by Diamond Black Leaf Co., Cleveland, Ohio, to Diamond Alkali Co., Cleveland. First use Feb. 26, 1957.

Vanox, in heavy capital and lower case letters, for sodium arsenite weed killer. Filed July 24, 1957, by R. T. Vanderbilt Co., Inc., New York. First use June 24, 1957.

Hardigreen, in capital letters, for plant food. Filed Oct. 16, 1957, by Wilson & Toomer Fertilizer Co., Jacksonville, Fla. First use Sept. 19, 1956.

Prima-Vera, in capital letters, for liquid fish fertilizers. Filed Oct. 21, 1957, by Romeo Packing Co., Half Moon Bay, Cal. First use Sept. 15, 1947.

Romeo, in capital letters, for liquid fish fertilizers. Filed Oct. 21, 1957, by Romeo Packing Co., Half Moon Bay, Cal. First use Sept. 15, 1947.

Lucky Gardener, in capital letters, for liquid fish fertilizers. Filed Oct. 21, 1957, by Romeo Packing Co., Half Moon Bay, Cal. First use April 1, 1953.

Turfilizer, in capital letters, for fertilizer. Filed Oct. 30, 1957, by Corneli Seed Co., St. Louis, Mo. First use Sept. 6, 1957.

Bonnie Lass, in capital letters, for soil conditioner. Filed Nov. 12, 1957, by Bonnie Brands, Inc., New York. First use Oct. 25, 1957.

Agristim, in capital letters, for plant growth stimulant and fertilizer. Filed Nov. 12, 1957, by Chas. Pfizer & Co., Inc., Brooklyn, N.Y. First use Feb. 8, 1957.

AGRONOMIST NAMED

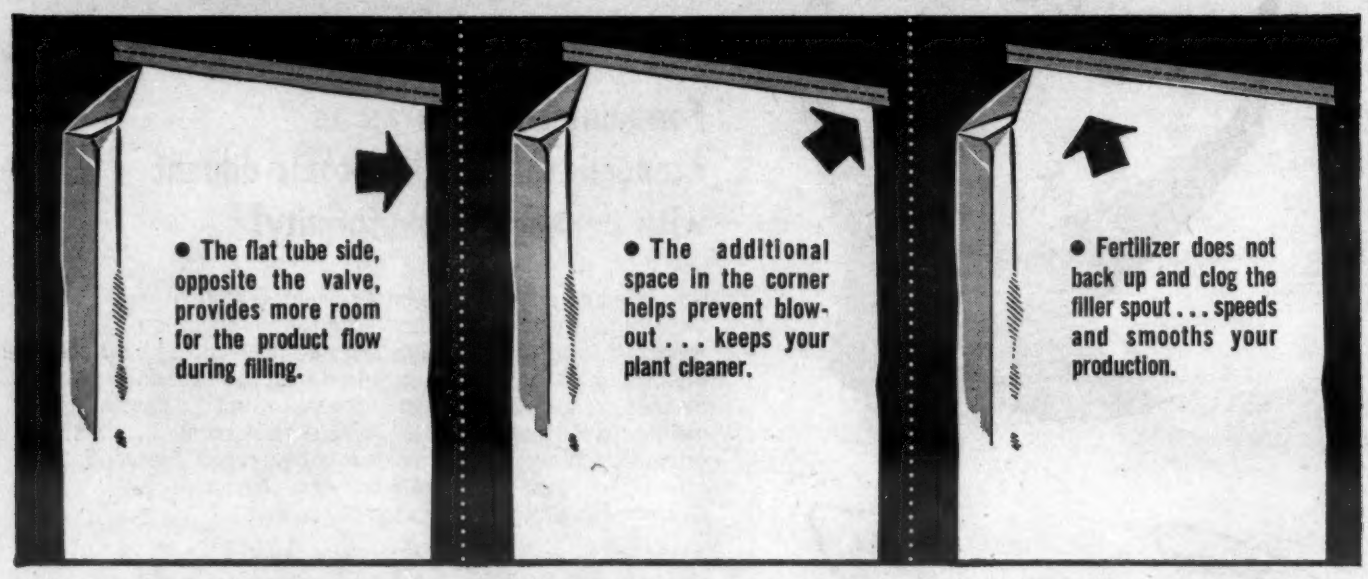
ST. PAUL—Dr. Harley J. Otto has been appointed agronomist at the University of Minnesota. He earned his Ph.D. at Cornell University.

ANOTHER BEMIS MULTIWALL FIRST...

ANOTHER IMPORTANT BONUS FOR YOU...

Bemis Single-Gusset Sewn-Valve Multiwalls

The new Bemis Single-Gusset Sewn-Valve Multiwall will improve your packing performance, *because*


• The flat tube side, opposite the valve, provides more room for the product flow during filling.
• The additional space in the corner helps prevent blow-out . . . keeps your plant cleaner.
• Fertilizer does not back up and clog the filler spout . . . speeds and smooths your production.

And there is a good chance this new Bemis Multiwall will cost you less, too. The additional usable space created by the flat tube corner often permits the use of a shorter bag, which would save you money. Your Bemis Man will check this possibility with you.

Bemis Single-Gusset Multiwalls Stack Perfectly, Too

You can palletize Bemis Single-Gusset Multiwalls easily and firmly . . . and pile them three pallet loads high, if you wish. They square up well. In fact, you have to look rather closely at stacked bags in the warehouse to determine whether they are single-gusset or two-gusset types.

Bemis

General Offices—408 Pine Street, St. Louis 2 • Sales Offices in Principal Cities

Special Merchandising Section

Better Selling

Marketing News and Features

Farm Pricing, Credit Uses Are Discussed At Vermont Meeting

BURLINGTON, VT.—Forward pricing in agriculture and safe debt loads for dairymen were two major topics discussed before more than 100 bankers, credit representatives and farmers attending the recent Vermont Farm Credit Conference at the University of Vermont.

"Forward pricing would reduce farm income instability and offer farmers a better guide in planning production to obtain more in terms of purchasing power," said Philipp Lohman, economics department chairman at the university. "Combining government forward pricing with something similar to unemployment benefits for the farmer could help agriculture."

"For the forward pricing system, I'd like to see a board established to consider all phases of the outlook, and set the price ahead. This is done successfully in industry.

"The second step would go beyond social security. In time of prosperity, farmers would contribute. Then, in poorer times, they would have income supported somewhat below each farmer's long-run average," the economics chairman explained.

He said agreement is fairly general that some form of government intervention is now necessary. A farm is now a manufacturing unit and the farmers going out of business should not be brutally left to shift for themselves. They should have some help in getting out of agriculture.

A panel made up of bankers, farmers and credit representatives agreed that the debt load which might be carried safely by a Vermont dairyman would depend on the farmer, his farm, his animals and his equipment. It was estimated that a good farmer can carry a debt load of from $300 to $500 per cow. One panel member predicted that debts higher than $500 per cow, for the better farms and better herds, would come in the future.

Paul R. Miller, dean of the College of Agriculture, welcomed the group to the campus and observed that credit is one of the important tools of farming. Gone are the days when it was considered a disgrace to borrow. However, he concluded, like any tool of farming, credit must be chosen and used wisely.

Entomologists Issue Alfalfa Weevil Warning

MORGANTOWN, W. VA.—The alfalfa weevil has caused extensive damage to some fields in the eastern part of West Virginia in the past two years, and can be expected to spread to other fields this year, two West Virginia entomologists warn.

They are Dr. C. K. Dorsey and Dr. H. L. Hansen, authors of a new circular, "Alfalfa Weevil Control in West Virginia." The publication provides a guide to controlling the pest in West Virginia during the spring and early summer months.

The two entomologists used insecticides during field tests in badly infested fields last summer and reported very successful control. In some cases, more than 95% of the weevils were killed by the insecticide, they report.

Farmers' Attitudes Toward Fertilizer Use In Northeastern United States Summarized

EDITOR'S NOTE: The accompanying analysis and summary of the principal findings of a study of farmers' attitudes toward fertilizers were prepared for the National Plant Food Institute, Washington, by National Analysts, Inc., Philadelphia. The summary applies to the New England states, plus New York, Pennsylvania, New Jersey, Maryland and Delaware. Studies were also conducted for other regions of the U.S. and will be summarized in subsequent issues of Croplife.

Principal findings discussed in the following summary may be classified in two contrasting categories:

1. Those factors which tend to influence farmers to use adequate amounts of fertilizer, i.e., positive influences.

2. Those factors which tend to keep farmers from using adequate amounts of fertilizer, i.e., negative influences.

Positive influences include:

A. Soil test results and recommendations
B. Trial and error—own judgment or skill
C. County agent and other agricultural experts
D. Fertilizer dealers
E. Demonstration plots
F. Neighbors
G. Mass media of communications

Negative influences include:

A. Lack of money or credit
B. Fears of adverse weather and that fertilizer will do harm
C. Educational level — inability to understand educational material —lack of knowledge about fertilizer
D. Pessimism about the future of farming, and lack of plans for improvement
E. Bias against fertilizers

QUESTIONNAIRE AND SAMPLE: The questionnaire for the survey was developed by National Analysts in collaboration with a special industry committee and members of the NPFI staff. (All questions are repeated in the accompanying report).

Farms of less than 100 acres were excluded from the survey. Although this resulted in eliminating about 54% of all farms in the U.S., as listed by the Bureau of the Census, the actual sample represented about 92% of the total farmland.

Questions relating to fertilizer were asked specifically of each farmer for the two most important crops he grew in 1956.

RESULTS: The principal findings of the survey are here made available in summary form. They can be related to other available statistical data such as U.S. Census and Department of Agriculture statistical reports.

Level of Fertilizer Use Important: Each farmer in the survey was classified on the basis of his fertilizer practices and placed in one of these groups: (1) high user, (2) medium user, (3) low user, and (4) used no fertilizer in 1956 on either of his two most important crops.

How High Users Differed: As might be expected, farming operations in the "high user" group differed in most respects from those in the other groups:

1. Higher Gross Income . . . In 1956, 57% of the high users of fertilizer had gross incomes in excess of $10,000, whereas only 27% of the low users reached this income level. About one-third of all farmers in the region had an income in excess of $10,000 in 1956.

2. More Machinery and Equipment . . . Slightly more than 40% of the high fertilizer users had machinery and equipment valued in excess of $10,000 in 1956, whereas only 18% of the low users had this amount of equipment. The regional total was 26% of all farmers in this category.

3. More Livestock and Poultry . . . One-third of the high fertilizer users had livestock and poultry valued in excess of $10,000 in 1956, whereas only 12% of the low fertilizer users fell in this category. The regional total was 19% of all farmers in the Northeast.

4. Higher Per Acre Income . . . The

(Turn to ATTITUDES, page 14)

SHOP TALK

OVER THE COUNTER

By Emmet J. Hoffman
Croplife Marketing Editor

It is interesting to note that one of the leading studies of the role played by dealers in selling fertilizer has become an extensive project not of any segment of the industry but of two rural sociologists from Iowa State College. The fertilizer industry has benefited much from the work of these two men, Dr. George M. Beal and Dr. Joe M. Bohlen, and their present work is certain to provide even more information about dealer and farmer attitudes regarding fertilizer.

The two sociologists recently reported on a preliminary pilot study pertaining to the dealer's role in fertilizer use. An Iowa study is now in process and will permit generalizations, whereas Dr. Beal and Dr. Bohlen point out that the data from the preliminary pilot study are not sufficient to permit generalizations. They are informative, nevertheless.

These data were gathered from a purposive sample of 12 Iowa dealers who operate their businesses in the southeastern one-third of Iowa.

Characteristics of The Business

Fifty per cent of these businesses were sole proprietorships, 33% were cooperatives, 8% were partnerships and 8% were corporations. They employed from two to 12 employees with an average of six employees per business. They had a gross volume of business which ranged from $160,000 to $800,000 a year with an average gross volume of $312,000.

The range in dollar volume of fertilizer departments of these dealers was from $5,000 to $38,000 a year with an average of $18,500 gross sales in fertilizer. This amounted to a range of from 2% to 15% with an average of 6.6% of their gross volume being in fertilizer.

The managers in this study spent an average of 5.6% of their work time in management of fertilizer and .6% of their time in working in the fertilizer department. Their employees spent an average of .5% of their time in administration of the fertilizer department and 1.3% of their labor time in the fertilizer department. These dealers spent much more time in other areas of business activity. Average grain handling, storage and sales, made up 30% of their business, feed sales 43% of their business, eggs and chickens 5% and lumber and building materials 4%. They also handled many other types of merchandise.

Dealer's Perception of Fertilizer in Business

The dealers in this study had varied opinions of the role of fertilizer in their business. When asked the question, "Please indicate your evaluation of the importance of fertilizer to your total business from this list of statements," the items were checked in the following manner:

A good money maker in itself	33%
An important service to bring in business	50%
Another customer service	75%
Not a money maker, but have to carry fertilizer to compete with other business	33%

Dealer's Perceptions of Dealer's Role in Fertilizer Use

When asked if they thought that they should try to influence farmers' decisions about how much to apply, 92% of the dealers responded that dealers should do this.

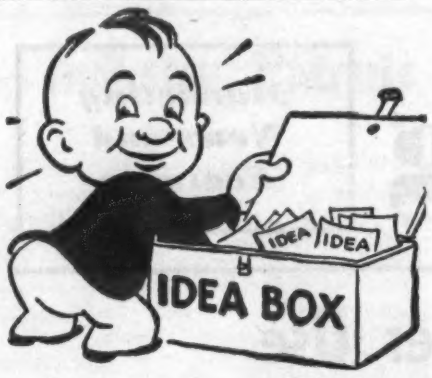
Eighty-four per cent thought that

(Turn to OVER THE COUNTER, page 13)

THE FAMILY FARM

★

"We may hate to see the number of farms decrease, but we are living in a world far different from that of a hundred years ago. None of us wants to go back to the days of the wooden plow and the sickle. Family farms are not going out, but small farms are. Were we to maintain the present number of farms, then we might have to consider part-time farming on small farms that are difficult to operate efficiently."—Dr. R. H. Tremblay, agricultural economics department, University of Vermont.



What's New...

In Products, Services, Literature

You will find it simple to obtain additional information about the new products, new services and new literature described in this department. Here's all you have to do: (1) Clip out the entire coupon and return address card in the lower outside corner of this page. (2) Circle the number of the item on which you desire more information. Fill in your name, your company's name and your address. (3) Fold the clip-out over double, with the return address portion on the outside. (4) Fasten the two edges together with a staple, cellophane tape or glue, whichever is handiest. (5) Drop in any mail box. That's all you do. We'll pay the postage. You can, of course, use your own envelope or paste the coupon on the back of a government postcard if you prefer.

No. 6737—Range Fertilization Leaflet

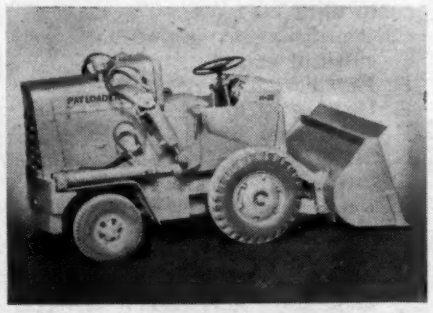
A leaflet entitled "A Report to California Ranchers" presents case histories of California range demonstrations. The report was prepared by Balfour, Guthrie & Co., Ltd. and describes field operations carried out by the company, individual ranchers, soil conservation districts and California State Polytechnic College. Results showed a $16.99 average increase in profit per acre, the leaflet states. Check No. 6737 on the coupon and mail it to secure the leaflet.

No. 6739—Advertising Mats

Advertising mats made up for dealers who want to advertise in their local newspapers certain farm and orchard chemicals manufactured by the U.S. Rubber Company, Naugatuck Chemical Division, have been prepared. Information about the mats may be obtained by checking No. 6739 on the coupon and mailing it to Croplife.

No. 6725—Front-End Loader

The Frank G. Hough Co. has announced production of an entirely new "Payloader" model, the H-25. It



is a rubber-tired front-end loader with rated carrying capacity of 2,500 lb. It can be operated out of boxcars having 6-ft. doors. Company officials say that is has a different frame, wheels, axles, transmission, torque-converter, styling, bucket design, electrical system, hydraulics, brakes, engine, differential, etc., than other "Payloader" models. The unit has a 12-volt electrical system. Check No. 6725 on the coupon to secure details. Please print or type name and address.

No. 6738—Seed Treatment Data

A comprehensive 54-page book which describes the properties and uses of seed treating compounds has been published by Corn States Hybrid Service. It contains a compilation of article reprints which detail the results of experiment station studies of seed treatments conducted throughout the country. The treated seeds were tested in cold test chambers, greenhouses, seed fields and on farms. Also included in the publication are descriptions of the various formulations now available and the treatments recommended for control of fungi, smuts, seed decay and seedling blight. Specimen labels for each formulation are bound into the book. Secure the book by checking No. 6738 on the coupon and mailing it to Croplife. Please print or type name and address.

No. 6011—Boom Truck

Details of a new type of boom truck, the "Hydro-Boom," have been announced by the Vanguard Engineering Co. The boom moves in all directions and is available in hand-operated or battery-operated models with or without power propulsion. Check No. 6011 on the coupon and mail it to secure details. Please print or type name and address.

No. 6016—Bulk System

"Kaiser Nest-A-Bin"—a product of the Kaiser Aircraft & Electronics Division of Kaiser Industries Corp., is described as a bulk handling and storage system for liquids and granulars in the feed, grain and other industries. The bins have a storage capacity of 77 cu. ft. Eight empty bins can be nested in the same cubic space occupied by one full bin. Secure details by checking No. 6016 on the coupon and mailing it to this publication. Please print or type name and address.

Also Available

The following items have appeared in the What's New section of recent issues of Croplife. They are reprinted to help keep retail dealers on the regional circulation plan informed of new industry products, literature and services.

No. 6722—Time-Lapse Film

A kernel of corn sprouts and grows to a full-sized stalk in a matter of minutes in an educational color motion picture recently released to show the value of nitrogen for good plant growth. The film can be booked in the Midwest through the Nitrogen Products Department of the Standard Oil Co. The film was produced by Standard Oil Co. (Indiana) and filmed by John Ott, Winnetka, Ill., a specialist in time-lapse photography. The 25-min. non-commercial film, with sound narration, is called "Nature's Need for Nitrogen." It is available to farm and agricultural organizations and other interested groups. Check No. 6722 on the coupon and mail it to Croplife.

No. 6723—Fertilizer, Lime Pamphlets

Three pamphlets designed to help farmers realize higher yields per acre are available free from Monsanto Chemical Company's Inorganic Chemicals Division. Two of the pamphlets are devoted to the correct fertilization of corn and cotton, respectively; the third points out the advantages of applying lime to fields in order to increase crop yields and help fertilizers do their most efficient work. Check No. 6723 on the coupon and mail it to Croplife to secure details. Please print or type name and address.

No. 6730—Herbicide Ingredient

Volume production of methylacetylene-propadiene, a chemical intermediate, has been started by the Dow Chemical Co. Fields in which the chemical may find use include agricultural herbicides. Check No. 6730 on the coupon and mail it to secure details. Please print or type name and address.

No. 6719—Weed Control Guide

"Chemical Weed Control Guide," an annual publication, has been prepared for 1958 by the Soil Building Division, Cooperative G.L.F. Exchange, Inc. The 76-page guide lists weed control information for the dairyman, vegetable grower, fruit grower, diversified farmer and instructions in the use of weed killers and equipment. Check No. 6719 on the coupon and mail it to Croplife. Please print name and address.

No. 6735—Insecticide-Fertilizer Brochure

A colorful, 8-page brochure has been published by the Velsicol Chemical Corp. to describe methods of applying fertilizer mixed with Heptachlor insecticide. Broadcasting, banding in the row, side dressing, liquid application, double banding, and drilling with seed are discussed. Action photos and two-color drawings accompany the text. The brochure is educational in nature and can be used as an aid to farmers and in classroom work. A copy of the brochure may be obtained by checking No. 6735 on the coupon and mailing it to Croplife. Please print or type name and address.

No. 6733—Soil Fungicides

Advice on use and benefits of soil fungicides are offered in three new pieces of literature issued by the Insecticides Products Department of the Olin Mathieson Chemical Corporation. Two of the six-page folders, in color, describe the use of Terraclor, a successfully tested fungicide, on vegetables and crucifers. The third is a technical application bulletin for the treatment of damping-off or "soreshin" on cotton. Copies of the pamphlets may be obtained by checking No. 6733 on the coupon and mailing it to Croplife. Please print or type name and address.

No. 6726—Pre-Emergence Weed Killer

"Alanap" is the trade name for a pre-emergence liquid weed killer for soybeans, vine crops, peanuts, asparagus and cotton. Manufacturer of the product is United States Rubber Co., Naugatuck Chemical Division. New literature describing features of "Alanap" is available without charge. Check No. 6726 on the coupon and mail it to Croplife. Please print name and address.

No. 6724—Rubber-Lined Tanks

The Gates Rubber Co. has prepared a new folder describing its "50-H rubber-lined tanks" and listing tank

Send me information on the items marked:

- ☐ No. 6011—Boom Truck
- ☐ No. 6016—Bulk System
- ☐ No. 6719—Weed Guide
- ☐ No. 6722—Time-Lapse Film
- ☐ No. 6723—Pamphlets
- ☐ No. 6724—Tanks
- ☐ No. 6725—Loader
- ☐ No. 6726—Weed Killer
- ☐ No. 6727—Applicator
- ☐ No. 6728—Apple Insects
- ☐ No. 6729—Plant Tranquilizer
- ☐ No. 6730—Ingredients
- ☐ No. 6731—Container Closure
- ☐ No. 6732—Weed Killer
- ☐ No. 6733—Fungicides
- ☐ No. 6734—Mulch-Layer
- ☐ No. 6735—Brochure
- ☐ No. 6736—Crabgrass Product
- ☐ No. 6737—Leaflet
- ☐ No. 6738—Seed Treatment
- ☐ No. 6739—Ad Mats

(PLEASE PRINT OR TYPE)

NAME .....

COMPANY .....

ADDRESS .....

CLIP OUT—FOLD OVER ON THIS LINE—FASTEN (STAPLE, TAPE, GLUE)—MAIL

FIRST CLASS
PERMIT No. 2
(Sec. 34.9, P. L. & R.)
MINNEAPOLIS, MINN.

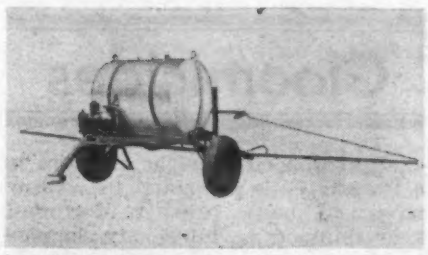
BUSINESS REPLY ENVELOPE
No postage stamp necessary if mailed in the United States

POSTAGE WILL BE PAID BY—

Croplife

P. O. Box 67

Reader Service Dept. Minneapolis 1, Minn.



specifications for both pressure and non-pressure fertilizer chemicals. The literature states that Gates tanks "give permanent corrosion protection for all fertilizer solutions." The tanks have a 3/16-in. rubber lining "welded" to the steel surface, states the folder. Check No. 6724 on the coupon and mail it to secure details. Please print or type name and address.

No. 6736—Crabgrass Product

Chlordane, an established lawn and garden insecticide, is effective as a crabgrass killer, according to the Velsicol Chemical Corp. One Chlordane application in the early spring, before crabgrass seed germinates, will rid a lawn of crabgrass for the season, and provide several seasons of insect control, it is claimed. Chlordane, it was determined from experiments, kills the first true leaf of the crabgrass plant, as it emerges from the seed. A hose attachment, sprinkling can or sprayer can be used for application. Check No. 6736 on the coupon and mail it to Croplife. Please print or type name and address.

No. 6729—Plant Tranquilizer

A chemical tranquilizer for plants has been developed by United States Rubber Co. It will be marketed for use on selected crops for the first time this season. Called by the trade name, "Duraset-20W," the product is said to increase plant yields by reducing the effects of shock and stress caused by such conditions as heat spells and sudden cold snaps. Successful field tests have been performed by using the product on tomatoes, cotton, cherry trees, alfalfa, soybeans and other fruits and vegetables. Check No. 6729 on the coupon and mail it to secure details.

No. 6728—Apple Insect Control

Acceptance of a "Crag Sevin" experimental label for control of apple insects has been granted by the U.S. Department of Agriculture, it was announced by Crag Agricultural Chemicals Department, Union Carbide Chemicals Co., Division of Union Carbide Corp. The product will be available only in limited quantities this year. The new label recommends use of "Sevin" 50% wettable powder at the rate of one or 2 lb. per 100 gal. of dilute spray. Check No. 6728 on the coupon and mail it to secure details. Please print or type name and address.

No. 6732—Endothal Weed Killer

A new bulletin (No. W-11) has been prepared by Pennsalt of Washington Division, Pennsalt Chemicals Corp., on its product trade-named, "Penco Endothal weed killer" for sugar beets. The product is effective only when applied as a pre-emergent spray; troublesome weeds can be controlled by spraying seedbeds with this water-base formulation containing 2 lb. of disodium Endothal per gallon, according to company officials. Secure details by checking No. 6732 on the coupon and mailing it to Croplife.

No. 6734—Mulch-Laying Machine

A new machine for laying black polyethylene film for mulching purposes has been announced by the Bakelite Co., Division of Union Carbide Corp. The machine lays film at a speed of about one acre per hour. In a 1957 experiment with cantaloupes, film cost was $160 per acre and melon yields were increased nearly three times compared with the check plot. The mulch is laid prior to planting. Existing farm implements may be utilized in rigging up the machine. Secure details by checking No. 6734 on the coupon and mailing it to Croplife. Please print or type name and address.

No. 6727—Trailer Applicator

General Metals, Inc., has developed a new trailer applicator, the model TPD-200, for top-dressing of nitrogen solutions or complete liquid fertilizers. The unit is said to be ideal for fertilizing pastures, small grain and row crops, and up to 200 acres may be fertilized in one day. A choice of 235-gal. pressure or 210-gal. non-pressure tank of aluminum, steel or stainless steel is provided. The standard 21-ft. boom is made in three sections. There are 24 nozzles. Literature may be secured by checking No. 6727 on the coupon and mailing it to Croplife. Please print or type name and address.

No. 6731—Liquid Container Closure

The Rieke Metal Products Corp. announces its new "self-venting Flex-Spout" closure for liquid shipments. The unit incorporates an internal vent feature that obviates the necessity for other separate vents or closures on steel or fiber shipping containers. The closure is a completely assembled unit that requires no positioning or registration when affixed to the container. The spout is of polyethylene, it can be extended or recessed and is claimed to eliminate the "glug" in pouring. Check No. 6731 on the coupon and mail it to Croplife to secure details. Please print or type name and address.

Sneak Thief Weeds Are Heavy Eaters

BURLINGTON, VT.—Some weeds are sneak thieves—they use more water and plant food than do crops, according to T. R. Flanagan, assistant professor of agronomy, University of Vermont. A pigweed takes three times more water than does corn; ragweed uses more than does alfalfa. Many weeds demand more nutrients than do crops. Mustard, for example, craves twice as much nitrogen as does an oat plant and four times as much potash.

RINGING THE cash register

Merchandising Hints for The Retailer

A Sound Policy

"Satisfaction guaranteed—or your money back" is one of the basically sound policies of merchandising. Many experienced dealers rely on this policy and do so while protecting the best interests of their own enterprises. These dealers know that sometimes the worst procedure to follow is to refund the customer's money. Satisfaction does not always entail a cash refund. Every situation requires different handling but quite often a customer's complaint can be mutually satisfied if the customer's side of the story is heard, and then the dealer's side is explained. Many customers never think of the dealer's side of a problem. Sometimes an adjustment can be made, a trade-in allowed or the manufacturer's guarantee utilized. Whatever procedure is used, diplomatic handling of complaints is necessary.

Better Collections

Many retail feed merchants have improved their collection rate by printing the insignia of the local credit association on their monthly statements, says the Western Grain & Feed Assn. bulletin. Knowing that the feed merchant is affiliated with the local credit association is liable to make the customer pay the bill rather than the bill of some merchant not so affiliated.

Rear Door Suggested

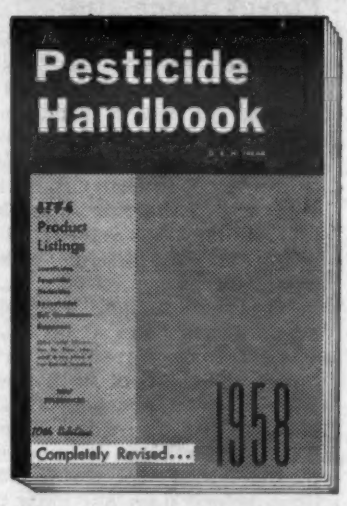
Some retail stores, because of buildings on adjacent sides, need to provide a rear entrance. Some merchants report as many as 80% of their customers use parking areas in the rear of the store. In such instances, a rear door for customers is needed. The rear entrance should actually become the front door and suitable facilities need to be provided. The rear entrance should be plainly identified, steps (if necessary) installed and a well defined traffic aisle leading to the main part of the store should be maintained. If a ramp is necessary it is wise to use an abrasive or non-skid finish for the surface.

Sell Results

Many customers buy for emotional reasons, not for logical reasons. The heart is often closer to the pocketbook than the mind, states an old saw. That is why sales successes are usually achieved by selling results rather than the product itself.

Potential Large

The untapped work potential in each employee is considerable. One psychologist places human efficiency at only 30% of possible performance. For example, if each employee's performance could be made 5% more efficient, the over-all result which could be achieved with all employees would result in a sizeable increase in work accomplished.



NEW EDITION
NOW AVAILABLE

AN IMPORTANT BOOK FOR THOSE INTERESTED IN ANY PHASE OF PEST CONTROL

County agents, extension and research specialists, manufacturers, salesmen, jobbers, dealers, purchasing agents, health officers, farmers and librarians have found this publication to be extremely useful time and time again. **Pesticide Handbook** is the ONLY book giving complete up-to-the-minute information on over 6,100 commercial products, completely indexed by trade names, active ingredients and manufacturers.

at your fingertips—

You'll find a wealth of information on fungicides, insecticides, rodenticides, adjuvants, diluents, compatabilities, antidotes, and pest control equipment. New tolerances are listed.

about the editor—

Dr. Donald E. H. Frear, Editor of PESTICIDE HANDBOOK 1958, is one of the leading authorities on the chemistry of pesticides. He is the author of "Chemistry of Insecticides and Fungicides," the first book dealing with this subject published in the United States. In addition, he has written several other books, including "Chemistry of Insecticides, Fungicides and Herbicides." Dr. Frear is Professor of Agricultural and Biological Chemistry at the Pennsylvania State University.

1.50
Cloth Bound Edition ea. $3.00
Postage included on prepaid orders

Send Today
PESTICIDE HANDBOOK
P. O. Box 798
State College, Pennsylvania

10TH ANNIVERSARY EDITION

Doing Business With

Oscar & Pat

By AL P. NELSON
Croplife Special Writer

Oscar Schoenfeld was a little out of breath when he got to the store and plant at 6:45 that early May morning, because one could not just rush a paunch that fast—especially after a full breakfast—without a little protest.

And Oscar, who prided himself upon getting to work before anyone else, found his uneasy stomach almost doing a flip flop when he saw a small truck parked alongside the front door and a man leaning against the building smoking a pipe. It was Alex Middleton, thin, stubble bearded village carpenter and sign painter.

"C'mon, Oscar, hurry up and open that door!" called Alex. "Why don't you get here earlier in the morning? I can't figure you modern business men out—you sleep too darn late. I allus get up at five bells every morning. I got half a day's work done by the time you lazy guys roll around."

"I am not lazy!" fumed Oscar digging in his pants pocket for the office key which he always kept on the long gold chain. "Ach, I am always the first one here in the mornings. We advertise we are open at 7 a.m. It is only 6:50 now."

"Even so, the boss oughta be here at six o'clock," persisted Alex who liked to kid. "The boss oughta lay out all the work by seven so that employees kin hop right to work when they get here. I'm a great guy for working. I believe a man should give a full day's work for a full day's pay —even a boss!"

"Huh," grumbled Oscar, thrusting open the door to the office. He did not like anyone taking over his philosophy of hard work, especially someone who believed in working longer hours than he did. "What do you want so early in the morning?"

"I've got a sign for you guys," Alex said. "Here, gimme a hand and we'll shove this big piece of plywood inside. Somebody might splash mud on it."

Protesting, Oscar had to grab the end of the big plywood sign otherwise Alex would have let it drop on Oscar's foot. Fuming, he grunted and puffed, carrying his end of the sign into the office.

"That's a dandy sign, even if I got to say so myself," Alex said, holding his battered corncob in his right hand. "I like that white background with the red lettering."

Oscar, still puffing a little, stood back and looked at the sign. The copy read:

"JUST SAY THE WORD
And we will deliver
FERTILIZER—IN BAG OR IN BULK
and spread it, too.
FOR EVERY $1.00 YOU INVEST IN FERTILIZER
YOU'LL GET UP TO $5.00 IN BIGGER CROPS
OSCAR & PAT WILL TELL YOU ALL ABOUT IT.
Man! Can We Fertilize!"

"Himmel, another sign!" Oscar cried. "We got too many now."

"Argue that out with Pat," said Alex drily. "He ordered the sign. It costs $8.50. I can stand the check right now, Oscar, if you'll use your fountain pen."

"The sign says the same thing all the other signs say!" Oscar said bitterly. "We don't need it. That crazy Irisher!"

Alex's lips got thin. "I said I can use the check, Oscar. The old mazuma, you know. That's what I'm talking about."

There was the roar of a motor outside and a new pickup truck drove up. It had a brilliant red body. Then a dark haired, hatless young fellow in grey service suit stepped in. "Dave's Garage" was the copy on the suit.

"Where do you want the truck?" he said. "The sign's in the back."

"Truck!" cried Oscar. "We didn't buy a truck. Ach, this is a mistake."

The young man shook his head. "No, I was standing right next to Mr. Howe when he and Pat made the deal yesterday. We're gonna lend you fellows the truck if you put a sign on advertising our garage."

"But we got a truck," Oscar cried angrily. "We don't need another one."

"Listen," said Alex patiently. "I need my money, Oscar. I ain't got all day to stand around here."

The garage attendant sighed. "Look, Mr. Schoenfeld," he said. "Ain't you wise? Pat is gonna load that truck of ours full of fertilizer and park the truck near the road with a sign on it tellin' farmers to buy fertilizer. That's what he said. Mr. Howe said he'd donate the use of the truck for a week if you guys put a sign on sayin' this truck could be bought at our garage. And if it rains, Pat's gonna put a plastic bag over truck and contents."

"Ach du Lieber Gott," cried Oscar pacing up and down. "Always this crazy promotion to sell more fertilizer. People know we got it. Why do we have to do all this monkey business all the time?"

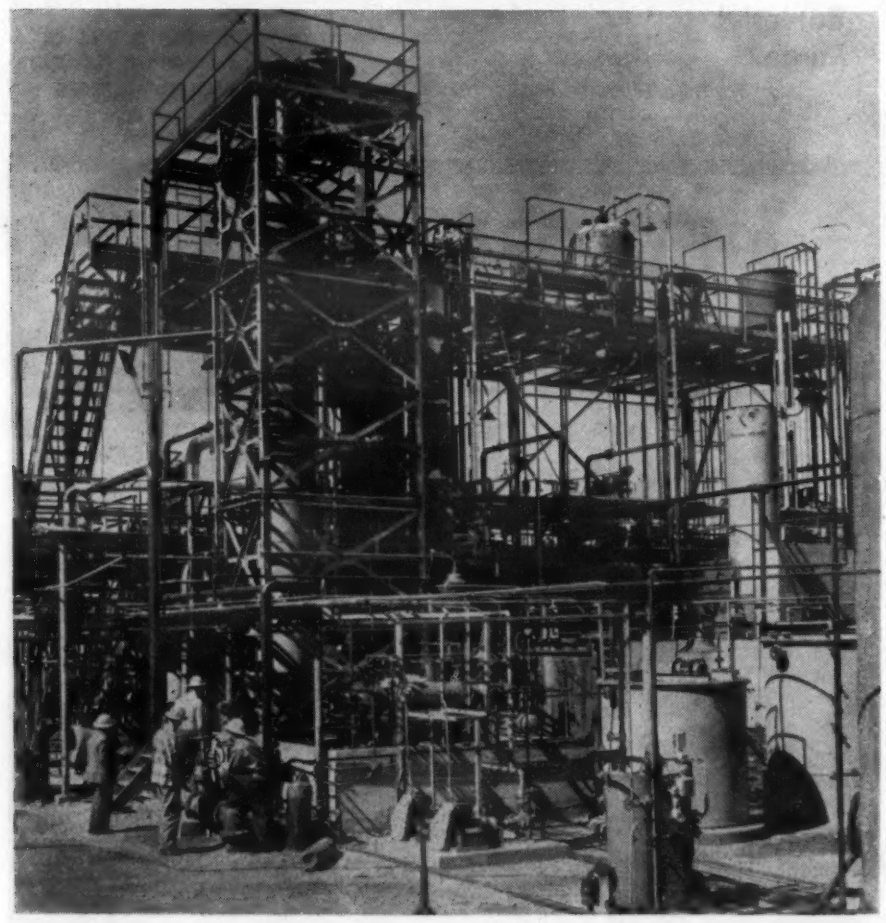
The garage man shrugged. "Well, I brought the truck, and there it is with the keys in it. I gotta get back. There's two grease jobs to be done."

Oscar turned just in time to see Alex Middleton hauling a bag of fertilizer out to his light truck. "Ach, what are you doing?" he cried.

"I asked you four times for my check," Alex said belligerently, "and you don't pay any attention to me. These are tough times and I want my money. So I'm taking three bags for that sign bill and one extra bag for interest and inconvenience."

"Ach, put that back!" Oscar shouted. "We can't affordt that much interest. I will write that check, but I will take a 2% discount."

Alex shrugged. "Well, okay, I need the money." Then to himself. "I'm on to you, old boy. Next time I up my bill 20¢ to take care of that discount. Two can play at this game."



NEW STAUFFER PLANT—Shown above is a view of the new Trithion plant recently completed by Stauffer Chemical Co. at Henderson, Nevada. (Croplife, page 1, April 28.) Trithion is a new insecticide-miticide which Stauffer says is effective against 104 varieties of pests on 45 crops.

Fertilizer Storage Under Plastic Sheet Proves Successful

ATTICA, N.Y.—Ten tons of bulk fertilizer stored in plastic since Jan. 30 in the barn of Willard Rechter are still in perfect condition.

The storage experiment was a cooperative venture between Walter L. Baran, Cooperative G.L.F. Exchange technical field service man, Mr. Rechter, the G.L.F. Soil Building Division and the Attica Cooperative G.L.F. Service.

Mr. Rechter made a simple bin, by stocking hay bales about 3½ ft. high. The ten tons of granular fertilizer fit into a space about 9x14 ft.

A 25x35-ft. sheet of G.L.F. black polyethylene film was laid in the bale bine, the fertilizer dumped in and the plastic folded over the top. The plastic envelope does not have to be airtight, Mr. Baran says.

The plastic, Mr. Baran reports, costs about $1.50 per ton—75¢ a ton if it can be used for two years. "It could be good for three years," he said. The film can be repaired with adhesive.

BUYS FEED STORE

MARION, S.D.—W. W. Brady announces that he has purchased Earl Wieman's interest in the Marion Feed & Seed store.

Gloomicides

Eavesdropped over the transom in a Beverly Hills psychiatrist's waiting room: "I can't help it, doctor—I keep thinking my inferiority complex is bigger and better than anybody else's!"

◆ ◆ ◆

A doctor is a man who keeps telling children to eat more and parents to eat less.

◆ ◆ ◆

Twin brothers had enjoyed extremely pleasant relations with each other, until they attended a party one evening and met a very pretty girl. Soon they were contending for her attentions. As time went on they became more and more angry with each other.

"I don't see why you can't bow out of the picture," said one twin to the other. "You know my future depends on marrying that girl."

"What about my future?" asked the other. "You're the one that ought to bow out, especially after all I've done for you."

"What do you mean—after all you've done for me?"

"Well, if it hadn't been for me, you would have been born with two heads!"

◆ ◆ ◆

"You can't come in here and ask for a raise just like that," said the boss. "You must work yourself up."

"But I did," replied the employee. "Look, I'm trembling all over."

◆ ◆ ◆

Sailor, soulfully, at dance: "Tell me all about yourself—your struggles, your dreams, your telephone number."

◆ ◆ ◆

An English teacher was discussing the fact that Louisa M. Alcott, in writing about herself, stated that she tried to sell stories to keep the wolf from the door.

"What do you think Miss Alcott meant by saying she was trying to keep the wolf from the door?" the teacher asked one of the 10-year-olds in the class.

"I suppose," was the prompt reply, "she just didn't want the guy bothering her."

◆ ◆ ◆

The only thing more irritating than an inefficient wife—is an efficient one.

◆ ◆ ◆

A stranger in New York asked a bopster how he could get to Carnegie Hall. The reply: Practice, man! Practice!"

◆ ◆ ◆

By far the worst part of teaching, paper grading, is sometimes lightened by entertaining wrong answers and original spelling:

"In mid-evil days the country was organized on the old futile system . . . We must learn to coke with the situation, use the upmost care, and not take anything for granite."

◆ ◆ ◆

"So your new job makes you independent, eh?"

"Absolutely. I get here any time I want before 8 and leave just when I please after 5."

◆ ◆ ◆

"What's the difference between a psychotic and a neurotic?" we asked a distinguished phychiatrist friend. "In simple, everyday terms without scientific jargon," we added.

Our friend wrinkled his brow in thought. "Well," he said at last, "you could put it this way: A psychotic thinks two and two make five. A neurotic is well aware that 2 and 2 make 4, but it worries heck out of him."

OVER THE COUNTER

(Continued from page 9)

dealers should try to influence farmers as to the analysis of fertilizers they buy and 100% of them thought that the dealer should influence the farmer as to the method of application.

Services Offered by These Businesses

Services offered by dealers and dealer estimates of the percentage of customers taking advantage of them.

		Percentage of dealers offering services %	Est. percentage of customers using them %
1.	Soil testing lab.	8	20
2.	Soil sampling	80	33.2
3.	Soil test interpretation	72	42
4.	Credit	100	48.8
5.	Bulk applicator	88	30
6.	Anhydrous applicator	50	6
7.	Small dry fertilizer spreaders	73	22
8.	Clinics	8	40
9.	Fall fertilizer demonstration plots for farmer examination .	8	40
10.	Helping farmers plan fertilizer program ...	90	36
11.	Providing newspaper information, free sheets and radio advertising	58	51
12.	Calling on farmers..	80	45
13.	Throw aways and mailings	50	95
14.	Fair displays and booths	42	50

Fifty per cent of the dealers are working with vocational agriculture departments and extension service on joint educational programs. Dealers in this study were offering an average of 9.3% services per dealer. On the average, the dealers in this study felt that soil testing and interpretation, soil sampling and working with vocational agriculture teachers paid off more per dollar invested in services than other techniques.

In terms of the services which the dealers as a group thought that they should offer, data of this study indicates that the average number of services dealers thought they should offer is less than what they are now offering. The average number that they thought they should offer being 8.8 services. Of the 15 services mentioned, the only service which the dealers as a group thought that they should offer to a greater extent was fertilizer clinics.

In all of the other cases they, as a group, were either offering all of the services they thought that they should, or they were offering services that they thought that they should not be offering.

In summary, five of the dealers in the study said that they should not provide more customer services and seven said that they thought they should. As was pointed out earlier, most of these thought that they should add more fertilizer clinics to their service program.

Over 42% of the dealers in this study said that they would offer more fertilizer services if they could receive some help from outside sources such as the wholesaler or jobber of fertilizer. Those services most frequently mentioned as being added if they could receive outside help were soil testing and sampling and bulk or liquid application. Also mentioned were country sales calls, extension of credit to the end of the crop year, newspaper advertising and expansion of the fertilizer department.

Best Selling Techniques

When asked what was their best technique for selling fertilizer a wide variety of answers was received. Soil sampling and testing were mentioned by 24% of the respondents, 16% of the respondents mentioned general services and 16% mentioned on-the-farm selling as their best technique. Other techniques mentioned as being most effective in selling fertilizer included helping farmers plan fertilizer program, credit, bulk spreading, free delivery, and hard selling methods.

Roughest Competition

When asked what techniques other salesmen or dealers were using against them that made fertilizer sales most difficult, 82% of the group mentioned low prices. Other things mentioned were quantity and delivery discounts, deferred payment plans, free soil sampling and bulk spreading.

Personal Characteristics

The dealers in this study ranged in age from 23 to 63 with an average age for all the dealers in the study of 41.4 years.

Thirty-three per cent of the dealers in this study had gone to high school. Sixty-six per cent of the dealers in the study had had some college experience and 50 per cent of the sample had college degrees. Sixty-six per cent of the dealers in this study had attended a fertilizer short course at some time or another in the past three years.

Attitudes and Knowledge

To get at the attitudes and knowledge of the dealers in this study several scores were devised. One of these scores dealt with knowledge of soil testing and soil sampling and fertilizer use. The total possible score in this soil testing knowledge scale was 60 points. The scores ranged from 0 to 48 with a mean score of 32.2. There was also a scale devised to measure attitudes toward soil testing and fertilizer use. The total possible score on this scale was 55 points. The range of these scores was from 28 to 55 with a mean score of 46.5. In other words, the dealers in this study in general were favorable towards soil testing as a technique in using fertilizer.

Another scale used in this study was one on progressivism. This was a scale devised to measure the dealers' attitudes toward acceptance of new practices and techniques in merchandising in their businesses. A total possible score on this scale was 50 points. The range in scores was from 30 to 47 with a mean score of 38.

Another scale was devised to measure the dealers' attitudes toward scientific farming and the acceptance of innovations and practices on the part of the farmer. A total possible score on this scale was 55 points. The scores made by the dealers ranged from 30 to 53 with a mean score for all of the dealers of 42.8.

Dealer's Conceptions of Farmers' Fertilizer Usage

The dealers in this study were asked what they considered to be the major factors limiting farmers' use of fertilizer. When asked this question without a checklist and responding on the basis of the ideas that came to their minds, the most frequently mentioned limitation was the lack of available capital, mentioned by 72%. Lack of knowledge of fertilizer was the next most frequent response, mentioned by 65%. Also mentioned were dry weather, the amount of labor involved in spreading it and unwillingness on the part of the farmers to change their practices. When the dealers were given a checklist on which they could respond regarding this question, those items checked most frequently as limitations were, in the order of mention, lack of knowledge about fertilizer, lack of available capital, dry weather and type of farming lease.

The dealers were also asked how important they thought the using of commercial fertilizer was to the income and the prestige of the farmer. Insofar as the importance to the farmers' income is concerned 8% thought fertilizer usage was an absolute necessity, 50% thought it was very important, 33% thought the use of fertilizer was important, 8% of the dealers said that fertilizer use was not important to the farmers' incomes.

When asked how important they considered fertilizer to the prestige of the farmer in his community; none thought it was an absolute necessity, 42% thought it was very important to the farmers' prestige, 42% thought it was important to the farmers' prestige and 16% thought that it was unimportant to the farmers' prestige.

Another area of interest in terms of the dealers' perceptions of the farmer and his fertilizer use were the observations of the dealers as to the percentage of the farmers using fertilizer in their trade area. This is doubly important because in several of the cases the dealers' trade areas overlapped so there couldn't be the inconsistency in actuality that there was in the minds of the dealers. We found a range of opinion regarding the percentage of farmers using fertilizer from 20% of them using it to 90% of them using it. This range was set by two dealers with overlapping trade areas! The average percentage of farmers using fertilizer according to the dealers' perception was 54%. This figure is consistent with the actual findings of other studies.

Sources of Information Used by Dealers

When asked what sources of information they considered to be most important to their fertilizer business, the dealers ranked government agencies first, commercial sources were a relatively close second. Mass media and farmers were poor third and fourth.

When asked which sources they considered to be most reliable, government agencies ranked first with commercial sources a very close second and again mass media and farmers a poor third and fourth.

Receiver Named

McKEESPORT, PA.—Robert S. Grigsby, an attorney, has been appointed permanent receiver for the Organic Corporation of America, which closed its plant here about a year ago. McKeesport officials testified at the receivership hearing that fermenting garbage left in the plant when it closed has produced "intolerable" conditions.

NEW BREA DISTRIBUTOR

MADRAS, ORE. — Distributorship of Brea brand fertilizers for the central Oregon area has been taken over here by Jasa Ag Service. Jack Mitchell will be area representative. Scott C. Hanson, Yakima, Wash., district sales manager for Collier Carbon and Chemical Corp., Brea manufacturer, was here recently when contracts were signed with Jasa Ag Service.

Added Labor, Lack of Funds Slow Adoption Of New Practices

EAST LANSING, MICH.—Farmers do not adopt many of the sound farm practices recommended by agricultural college specialists because of the additional labor or bother involved or because of the want of extra funds.

Those conclusions were reached at Michigan State University in a study made by Jack Bittner and James Nielson. Mr. Bittner is the cooperative extension district marketing agent at Benton Harbor and Mr. Nielson, professor of agricultural economics, his faculty advisor on this master's thesis.

A technical bulletin based on the findings Mr. Bittner made in his research was published recently by M.S.U. The bulletin is entitled "Farm Practice Adoption in Michigan."

Using only farm practices that have been fully recommended and endorsed by M.S.U. agricultural college authorities for anywhere from six to as long as 50 years, Mr. Bittner surveyed the owners of 471 farms in six counties in the lower peninsula. He sought to learn how many farmers adopted any or all of 54 practices that the college specialists considered proven, money-making measures. All of the data were gathered during the spring and summer of 1954 when Mr. Bittner was on leave for graduate study.

Of the 54 practices cited in the study, the average rate of adoption was only 34%, Mr. Bittner reported.

From a high adoption rate of 94% for buying pullorum-clean or pullorum-passed chicks, it ran to a low of 2% for seeding rye grass and clover in corn or other row crops and for once-over tillage in planting corn and oats.

Only 17 practices were taken up by more than one half of the farmers, Mr. Bittner's study showed.

The marketing agent said that the practices had been adequately publicized by various means so that the lack of knowledge about any given practice was not a valid reason for non-adoption. He indicated the farm owners he sampled almost all said they were familiar with a practice that applied to their type of farming, even though they had not adopted the measure.

The six type-of-farming groups surveyed included southern Michigan dairy, northern Michigan dairy, southern Michigan livestock, southern Michigan general, southern Michigan crop and Saginaw Valley crop. Farms sampled were in Calhoun, Ionia, Lapeer, Tuscola, Kalkaska and Otsego counties.

STAUFFER PROMOTION

NEW YORK—Iver Macdougall has been elected assistant secretary of Stauffer Chemical Co. Mr. Macdougall joined Stauffer as an administrative assistant in 1953. Prior to that, he was engaged in private law practice in Nashville, Tenn.

CHOOSE YOUR WEEDICIDE, INSECTICIDE OR FERTILIZER APPLICATOR EQUIPMENT

from the Complete Broyhill ® LINE

the name that means **CUSTOM QUALITY**

Tractor, truck and trailer mounted tanks and spraying equipment.

SEND TODAY FOR COMPLETE CATALOG
No Obligation

The Broyhill Company
Dakota City, Nebraska

Gentlemen: Please send me your complete catalog for

☐ fertilizer applicator equipment ☐ weedicide, insecticide application equipment and parts

NAME .....

ADDRESS .....

TOWN or RFD ..... State.....

FARM SERVICE DATA

Extension Station Reports

A dairyman with a 100 acre farm, over a 30-year period, can increase his income as much as $100,000 by maintaining the soil at a pH above 6.5. So says Prof. E. C. Dunkle, agronomist at the New York State College of Agriculture.

According to the Cornell specialist, once the soil pH (measure of acidity and alkalinity) is near the neutral point (pH 7 is neutral), it doesn't cost much to keep the pH up.

The soil will lose, on the average, about 500 lb. of lime an acre a year, he says. This means it will take only about one ton of lime every four years to maintain a favorable pH. In New York, lime costs between $6.50 and $10 a ton. With proper liming, farmers can grow more and better crops such as alfalfa.

Most farmers nowadays have lime spread commercially by spreader trucks. Prof. Dunkle advises getting the lime on two years in advance of the legume crop. Have the lime put on sod which will be turned under for corn. Sod gives a good footing for heavy equipment. Then plow under the corn stalks for oats which are followed by the legume.

In an experiment at Cornell's Mount Pleasant farm near Ithaca, N.Y., this procedure was followed: Four tons of lime per acre were put on sod which was plowed for corn followed by oats. For the first cutting of hay the first hay year, plots to which no lime was applied produced 1.2 tons of mostly timothy an acre. Limed plots produced 1.8 tons of alfalfa.

First cuttings the second hay year on the no-lime plots produced 1.13 tons of mostly timothy an acre, whereas the limed plots produced 2.31 tons of alfalfa to the acre.

★

Yields of grain sorghum hybrids, tested for the first time in Virginia last year, ran an average of around 30% higher than open-pollinated varieties, say researchers at Virginia Polytechnic Institute Agricultural Experiment Station.

Tests were conducted at VPI branch stations at Warsaw, Petersburg, and Orange, and at the main station at Blacksburg. An early frost at Blacksburg severely damaged the sorghum test, and particularly the hybrids, which are later maturing than the sorghum varieties ordinarily used in Virginia. And as usual, birds caused considerable damage in the test plots.

★

Successful pear production in New York State is dependent on high annual yields and control of fire blight, according to Cornell University fruit specialists at Ithaca and Geneva.

"Until the mid 1940's many pear orchards in New York were maintained in relatively low vigor, since this tended to reduce the severity of fire blight," say the fruit specialists. "But this also means low yields and declining profits so that few new orchards were planted, with a steady downward trend in production."

With improved prices in recent years some neglected orchards have been rejuvenated and a few new ones planted. "But a consistent annual production of high-quality fruit is necessary to establish dependable markets essential for an economically sound enterprise," it is said.

Detailed recommendations for growing pears, including location of new plantings, cultivation and fertilization, blight control, pruning, harvesting, varieties, and other cultural requirements are available upon request to the College of Agriculture at Ithaca or the Experiment Station at Geneva.

Areas in the state deemed suitable for commercial pear growing include a strip along Lakes Erie and Ontario, higher areas in the Hudson Valley south of Hudson, N.Y., certain parts of the Finger Lakes region, and on Long Island.

Commenting on varieties, the specialists assert: "To be profitable, a pear variety should be well known by the public. For this reason, the pear industry in New York is based mainly on the Bartlett which has excellent dessert and processing qualities."

Other varieties recommended for commercial production include Clapp's Favorite, Gorham, a product of the fruit breeding work at the Experiment Station, and Beurre Bosc. These cover a season extending from two to three weeks ahead of Bartlett, to ten to twelve weeks after that variety.

★

New findings that may one day help in developing more effective control measures for Dutch elm disease were presented at the annual meeting of the National Academy of Sciences by Dr. A. E. Dimond of the Connecticut Agricultural Experiment Station. Co-author of the paper presented by Dr. Dimond is Dr. Ahktar Husain, formerly of the station staff.

The Connecticut station scientists have learned how the fungus responsible for the disease produces enzymes in the diseased elm tree and how these enzymes help the fungus.

Dutch elm disease is caused by a fungus that plugs up the trunk and branches of the elm tree so the water cannot move from roots to the leaves. Water-conducting cells develop balloon-like structures in diseased trees. One enzyme produced by the fungus probably loosens these structures, enabling them to move with the water stream. When a number of dislodged structures, called tyloses, get caught in a narrow opening of the water-conducting cells, they may create a dam and greatly cut down water movement.

Two enzymes are formed by the fungus that help it to attack the tree. One attacks the cementing substance in the stem, the pectins familiar to the housewife when she makes jelly. The other attacks cellulose wood substance.

Both enzymes are produced in very small amounts and break down the materials in the elm tree to sugar-like compounds that are not in themselves harmful. However, the fungus needs these compounds for food and elm sap usually contains too little food for the fungus to grow well. Thus these enzymes, freed by the fungus into the trunk of the elm, convert complex compounds into food for the fungus and at the same time the pectic enzyme helps produce water shortage by creating microscopic dams in the trunk and branches of the tree.

"It may be a long time before this research finds practical use in control of Dutch elm disease," Dr. Dimond said.

ATTITUDES

(Continued from page 9)

average gross income per acre of crop and pasture land in 1956 was $93.54 for the high fertilizer users, and only $55.98 for the low fertilizer users. The regional total was $67.69 of income per acre. It is significant to note that the income of those farmers who used no fertilizer at all in 1956 on either of their two major crops averaged only $43.93 per acre.

5. Larger Farming Operation . . . Of the high users of fertilizer, 71% had farming operations valued in excess of $25,000 in 1956, whereas only 44% of the low users of fertilizer were in this category.

6. Higher Level of Intelligence . . . When asked specific questions relating to fertilizer use based on: (1) grade and price, and (2) soil test information, the high level user made an appreciably better score than the low and non-user.

Attitudes Toward Farming Conditions Differ: More than half of the farmers in the Northeast made less money than expected over the past two years. The major reason given was "increased cost of production" (56% of all farmers), with "price situation" and "weather" following in order.

Of the farmers who made more money than expected over the past two years, 26% contributed this to their "own skill," whereas almost as many gave "soil fertility" (23%) and "price situation" (22%) as contributing factors.

Plans for increasing income . . . Over half of the farmers (54%) indicated that they had no plans for increasing farm income over the next five years.

Of those who had plans for increasing farm income, almost 70% indicated that they would make a change in their livestock program or holdings. Other factors, such as "cultivate more land," "new buildings," "use more fertilizer," were named much less frequently as contemplated changes for increasing farm income.

Changes in Farming Conditions: A few more farmers expected general farming conditions to improve (36%) than expected them to get worse (31%).

Of those expecting farming conditions to improve, 44% gave "better prices" as the principal reason, with other factors such as "improved marketing conditions" (34%), "larger farms" (22%), and "advances in technology" (14%), following in order.

Of those farmers who expected general farming conditions to become worse, the principal reason given (by 49% of all farmers) was "production costs," with "price situation" (42%) following in second place.

Soil Tests Important in Determining Fertilizer Needs: More than half of the farmers (55%) who used fertilizer on their major crop in 1956, had had a soil test made at some time since operating their farm. For the high users the figure was 80%, whereas for the low users it was only 36%.

When Northeastern farmers were asked how they determined the needs of their soils for growing better crops, 38% of their replies stated "soil tests," and a like percentage stated "own knowledge."

In determining either the grade or amount of fertilizer used in 1956, only 11% of the low users relied on soil tests whereas about one-third of the high users did.

Of those farmers using fertilizer on their major crop in 1956, over half (56%) said they followed the soil test recommendation, and 19% said they followed it only in part.

(In passing, it is significant to note that 45% of all farmers who fertilized their major crop in 1956 and never had a soil test made, on that particular field, since operating their farm, and that almost half of these (49%) gave "own negligence" as the reason.)

Of those farmers fertilizing on the basis of soil tests, 52% stated that the soil test report recommended a "specific analysis," 20% a "specific nutrient," and 17% "lime only."

Results of Fertilization Generally Satisfactory: Of those farmers fertilizing their major crop in 1956, almost half (49%) said they were "very satisfied" with the results, and almost one-third (32%) said they were "partially satisfied." Less than one-fifth reported being dissatisfied.

Reasons for Not Fertilizing: Among reasons for not fertilizing in 1956, half of the high users and 56% of the low users gave "not enough money" as a major reason. More than one-third (36%) of the low users said that fertilizer is "not necessary," whereas only 17% of the high users gave this answer as a reason for not fertilizing.

Attitudes Toward Doubling Amount of Fertilizer: When those Northeast farmers who fertilized their major crop in 1956 were asked, "What would be the effect of doubling your 1956 rate of fertilizer use?", the answers "waste money," "depend on weather," "increase yield," and "burn out crop," were each listed by an almost equal number of individuals (with 20 to 22% of replies in each category).

When farmers who did not fertilize their major crop in 1956 were asked, "What effect would applying 500 lb. of fertilizer per acre have on your major crop?", 55% of the replies gave "increase yield," 19% "better crop," and only 7% gave "depend on weather."

Farmers Planning Change in Fertilization: One-fiifth of the Northeastern farmers said they were planning something different in their fertilization program for this year over the past year. A like number of high, medium, and low users (24% of each group) reported a contemplated change, but only 12% of those who did not fertilize their major crop in 1956 said they would make a change.

Would use more fertilizer—Of those farmers planning a change in their fertilization program, about one-third (32%) of their replies stated that "use more fertilizer" was one of the changes that would be made. The use of "different elements" followed next in order (26% of replies).

When these farmers were asked why they were planning a change in fertilization, 30% of their replies listed "to increase yield," and 19% listed "changes in soils" as major reasons.

Credit Is Important: Assuming "no cash on hand," 32% of Northeastern farmers said they "certainly would" borrow money to buy fertilizer, while an identical percentage said they "certainly would not" borrow money

BASIC DIFFERENCES SUMMARIZED

	High Users	Low Users
Gross Farm Income	57% earned $10,000 or more in 1956	Only 27% earned $10,000 or more in 1956
Per Acre Income	Averaged $93 per acre	Averaged $56 per acre
Size of Farming Operation	71% of farms exceeded $25,000 in value	44% of farms exceeded $25,000 in value
Machinery and Equipment	42% exceeded $10,000	18% exceeded $10,000

even at a reasonable rate of interest.

Of those farmers indicating that they would borrow money, 61% reported that "farming is not possible or practical without fertilizer," and 52% reported that they thought "results would justify borrowing."

Of those farmers indicating that they would not borrow money to buy fertilizer, 42% said the results would "not justify" and 43% said they "do not believe in borrowing."

Effects of "ready cash"—Assuming "ready cash on hand," Northeastern farmers would make some changes in fertilizer use patterns. In 1956, 29% (of those fertilizing) used 250 lb. of fertilizer or less per acre on their most important crop. If Northeastern farmers had "ready cash," only 6% of all respondents indicated that they would use less than this amount. Another comparison can be made by including all farmers who used 450 lb. of fertilizer or less per acre (68% of those using fertilizer). If "ready cash were on hand," only 39% of all respondents indicated that they would use less than 450 lb. of fertilizer per acre on their major crop.

Demonstrations May Be Important: Although 79% of Northeastern farmers did not know the location of any demonstration plots, and 73% had never visited a field demonstration, of those who had, 68% reported that demonstrations can have a good or positive effect in making one think or in leading one to take action.

More than one-third (35%) of those farmers who had visited a demonstration said that a "fortuitous circumstance" led to their visit, and almost one-third (31%) said they had read or heard about it and made a special trip. Only 28% reported that their visit had been suggested by an "agricultural expert."

Own demonstrations—of the high fertilizer users, 41% had put on their own trials or demonstration plots, whereas only 18% of the low users had done so.

Of those farmers who had put out their own plots or trials, 78% reported that the results were "helpful," though in only 22% of the cases did farmers report that the results led to direct action.

Reading About Demonstrations: Slightly more than two-fifths (42%) of Northeastern farmers said that they had read something about demonstrations in farm magazines, college or other special publications, or newspapers. For high users of fertilizer the figure was 57%, and for low users, 40%.

Of those who had read about demonstrations, only 18% thought that their reading had led to further action, while 23% reported that reading was helpful although it did not result in direct action. A total of 42% said that their reading had left them "neutral."

While 80% of the high users reported reading about the fertilization of their major crop, only 58% of the low users reported so doing.

Discussion of Fertilizer Needs Can Be Helpful: Prior to buying fertilizer, 55% of those farmers who fertilized their major crop in 1956 reported discussing their contemplated purchase with somebody. Out of those who fertilized, 31% discussed their needs with their local dealer, 18% with their county agent, and 14% with family members.

Subjects most frequently discussed by those fertilizing their major crop in 1956 were fertilizer analysis (mentioned on 58% of replies) and amount of fertilizer to use (42% of replies). One-third of the farmer replies mentioned that "price" had been discussed, 8% mentioned "brand," and only 7% mentioned "expected results."

Farmers' Rating of Different Practices: When farmers who reported having plans for increasing their farm income (46% of those interviewed) were asked, "What plans do you have?", 68% of the replies stated that there would be a change in either the kind or amount of livestock holdings. This means that livestock have a very prominent place in the thinking of Northeastern farmers when it comes to ways of increasing income. The "use of more commercial fertilizer" was listed on only 10% of the replies as a means of increasing farm income.

But, it is interesting and important to contrast this observation with that obtained when fertilizer was compared with the following practices (by all farmers interviewed) in terms of what does the most toward making a "really good farmer."

Practice	Numerical Index*
More fertilizer/acre	100
More machinery	84
Works harder	81
More fertile land	69
Cultivates more land	59
Better crop rotations	51
Higher acre yields	50
Controls soil erosion	46
Uses better seed	37

*Recalculated from data in the report so as to place highest rating equal to 100.

Thus it is obvious that while Northeastern farmers give the "use of more commercial fertilizer" a prominent place in their thinking, most of them fail to associate fertilizer with their own plans for increasing farm income.

Spencer Reports Slow Fertilizer Purchasing

KANSAS CITY—Unfavorable weather retarded the movement of fertilizer materials, which normally contribute heavily to sales and profits of Spencer Chemical Co. in the three months ended March 31, Kenneth A. Spencer, president, stated in an interim report. As a result of the extremely cold, wet weather, farm work was delayed and the purchase and application of fertilizer were postponed, he added.

Although there was some decline in sales of industrial chemicals, the bulk of the decrease for the spring quarter was in agricultural chemical products. Sales of plastic materials showed a further rise.

In the three months ended March 31—the third quarter of the company's fiscal year—net sales amounted to $9,465,136, down from $14,152,135 a year earlier. For the nine months, the volume was $30,659,765, compared with $32,852,063 a year earlier.

Net income for the third quarter was $613,726, equal to 42 cents a common share, after preferred dividends. In the like 1957 period the net income was $1,729,868, or $1.41 a common share. For the nine months ended March 31, net income was $2,191,807, or $1.58 a common share, against $3,257,819, or $2.51 a share, a year earlier.

Mr. Spencer said that while some of the agricultural chemical volume has been lost as a result of the delayed season, the volume of sales in the current quarter is expected to be "somewhat higher than normal and should, to some extent, offset the unsatisfactory performance that was established in the third quarter."

Directors declared the regular quarterly dividends of 60¢ on the common and $1.05 on the 4.20% preferred, both payable June 1 to holders of record May 12.

SUPERINTENDENT NAMED

PORTLAND, ORE. — Dr. Richard M. Bullock, one of the Pacific Northwest's leading horticultural scientists, has been named superintendent of the Northwestern Willamette Valley Branch Oregon State College Experiment Station which will begin operations this spring on a 50-acre farm in western Clackamas County. The station, which was the goal of a six-year campaign by Willamette Valley producers, will primarily serve Clackamas, Columbia, Multnomah and Washington counties, heart of Oregon's small fruits, vegetable and nursery industry.

Books on Fertilizers And Their Use

FOREST FERTILIZATION
Donald P. White and Albert L. Leaf

A bibliography, with abstracts, on the use of fertilizers and soil amendments in forestry. Useful to those interested in prospects of a plant food market in forest areas, the book resulted from a special two-year study at the college of forestry, Syracuse University, Syracuse, N.Y., under sponsorship of the Nitrogen Division of Allied Chemical & Dye Corp. The book contains 300 pages, 700 references, with abstracts, and covers the period from 1865 through 1956. Includes the use of fertilizers in forest management **$3.00**

SOIL FERTILITY AND FERTILIZERS (1956)
Samuel L. Tisdale and Werner L. Nelson

An advanced college text, for juniors and seniors, following backgrounding course in soils. Covers elements required in plant nutrition, their role in plant growth, and the soil reactions to these nutrients. Several chapters on manufacture, properties and agronomic value of fertilizers and fertilizer materials. Latter part covers soil fertility evaluation and use of fertilizers in sound management program. 430 pages, cloth bound **$7.75**

PLANT REGULATORS IN AGRICULTURE
Dr. Harold B. Tukey

Published September, 1954. A text book giving background material for county agents, farmers, citrus growers, nurserymen, gardeners; providing fundamentals and general principles; covers encouragement of roots by plant regulators, control of flowering and fruit setting, parthenocarpy, abscission, prevention of preharvest fruit drop, delaying foliation and blossoming, maturing and ripening, inhibition of sprouting and weed control. Brings together specialized knowledge of 17 authorities in the field, with two chapters written by Dr. Tukey, head of department of horticulture at Michigan State College. 269 pages **$5.50**

THE CARE AND FEEDING OF GARDEN PLANTS
Published jointly by the American Society for Horticultural Science and the National Plant Food Institute.

An entirely new, one-of-a-kind book, it is designed to acquaint readers with nutritional deficiency symptoms or "hunger signs" of common yard and garden plants including lawn grasses, shrubs, flowers, garden vegetables, and cane and tree fruits. It stresses plant "feeding," or "what makes plants grow." Sixteen of the nation's leading horticultural authorities collaborated in its preparation. Cloth bound, 300 pages of text and illustrations including 37 pages in full color **$3.00**

AUXINS AND PLANT GROWTH
A. Carl Leopold

A 366-page book, complete with bibliography, appendix, and index, discusses the fundamental and applied aspects of growth hormone and synthetic auxin action in plants. These are of interest to all workers in agricultural chemicals—for weed control, flowering control, fruit set, flower or fruit drop and plant propagation. The text is divided into two sections, (1) fundamentals of auxin action, and (2) auxins in agriculture. These cover developmental effects of auxins, the physiological and anatomical effects of their application, the chemical nature of growth regulators, and methods of applying auxins and their persistence in plants and soils. Other subjects covered: rooting, parthenocarpy, flower and fruit thinning, control of pre-harvest fruit drop, flowering, dormancy and storage, herbicides, miscellaneous uses of auxins, and potentials of auxins and auxin research. Published by University of California Press..... **$5.00**

ECONOMIC AND TECHNICAL ANALYSIS OF FERTILIZER INNOVATIONS AND RESOURCE USE
By E. L. Baum, Earl Heady, John Pesek and Clifford Hildreth.

This book is the outgrowth of seminar sessions sponsored by TVA in 1956. Part I—Physical and Economic Aspects of Water Solubility in Fertilizers. Part II—Examination of Liquid Fertilizers and Related Marketing Problem. Part III— Methodological Procedures in the Study of Agronomic and Economic Efficiency in Rate of Application, Nutrient Ratios and Farm Use of Fertilizers. Part IV—Farm Planning Procedures for Optimum Resource Use. Part V—Agricultural Policy Implications of Technological Change. It presents new methodological techniques for more efficient handling of research problems related to fertilizers and provides more meaningful answers to problems of practical application **$4.50**

HUNGER SIGNS IN CROPS—Second Edition
A symposium—published jointly by the American Society of Agronomy and the National Plant Food Institute.

A comprehensive study of nutrient-deficiency symptoms in crops compiled by 19 of the leading authorities in the field. It is being widely used by college professors, research and extension specialists, industrial chemists and agronomists, county agents and teachers of vocational agriculture. Many farmers have found it of particular value in planning their fertilizer programs. Cloth bound, 390 pages, 242 illustrations, including 124 in full color **$4.50**

USING COMMERCIAL FERTILIZER (1952)
Malcolm H. McVickar

Dr. McVickar is chief agronomist of the National Fertilizer Assn. The book deals specifically with commercial fertilizer, how it is produced and how to use it. It is non-technical. It includes chapters on how to measure fertility of soils, secondary and trade-element plant foods. 208 pages, 106 illustrations, cloth bound..... **$3.50**

COMMERCIAL FERTILIZERS, Their Sources and Use—Fifth Edition (1955)
Gilbeart H. Collings

Based upon the author's practical experience as an experiment station agronomist and teacher, and incorporating information on recent developments by agronomists, chemists, engineers and fertilizer manufacturers. Authoritative on problems concerning commercial fertilizers and their use in gaining larger yields. 160 illustrations, 522 pages **$8.50**

APPROVED PRACTICES IN PASTURE MANAGEMENT (1956)
M. H. McVickar, Ph.D.

Outlines clearly and concisely how to have productive pastures to furnish high-quality forage for livestock, economically and efficiently. Written for grassland farmers. Covers the important activities associated with establishment, management and efficient use of pastures as grazing lands or as a source of fine winter feed for livestock. It is as specific as possible for all U.S. pasture areas. Twenty chapters, 256 pages, illustrated **$3.00**

MANURES AND FERTILIZERS

A survey by the Ministry of Agriculture and Fisheries, dealing with soil analysis, inorganic fertilizers, waste organic substances and principles of manuring. In language to give the farmer basic principles of increasing soil fertility by the application of natural organic manures and synthetic inorganic fertilizers. Many important tables on quantitative data **$2.50**

Order From Croplife

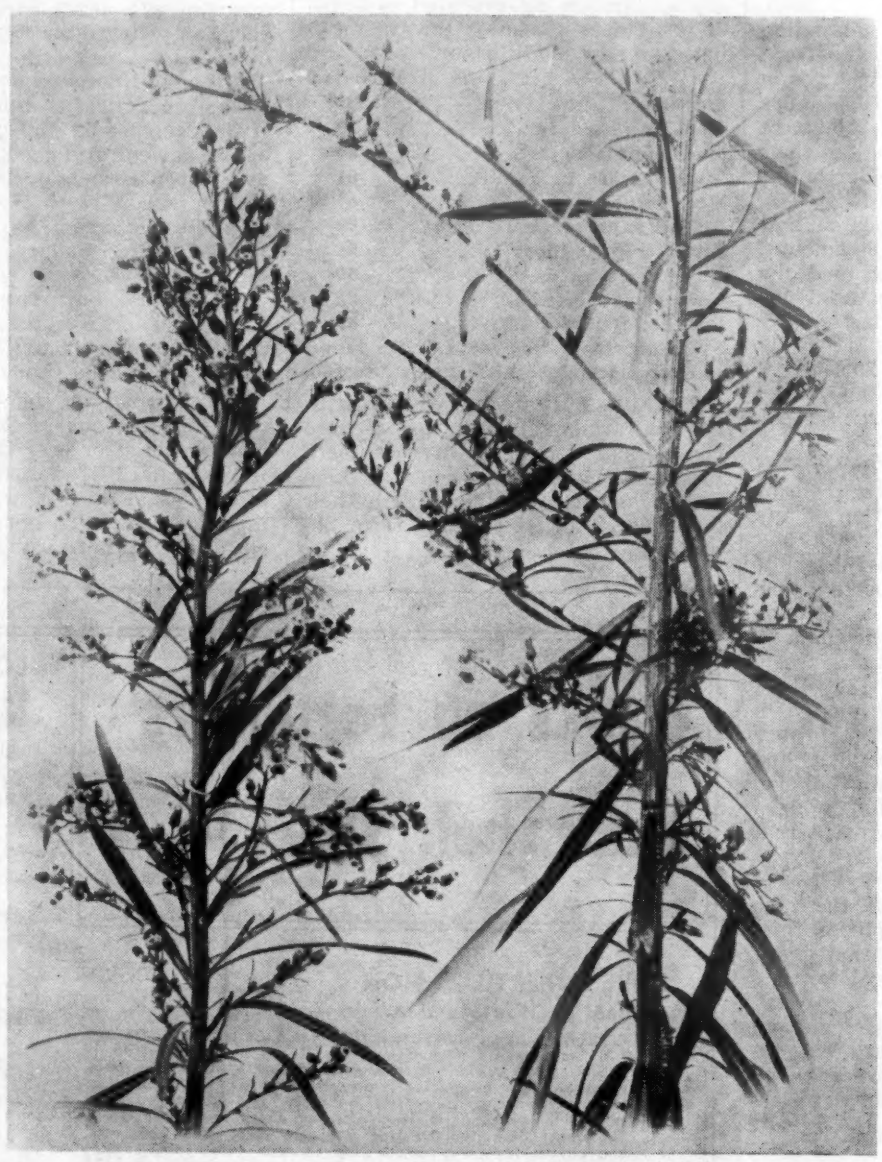
Reader Service Department
P.O. Box 67
Minneapolis 40, Minn.

(enclose remittance)

WEED OF THE WEEK

Horse-weed

(Erigeron canadensis)



How to Identify

Horseweed is an erect plant, growing to heights as tall as 6½ ft. They have a fibrous root system, and leaves are alternate, simple, short-petioled, and hairy. Flowers are small, in composite heads, the disk flowers whitish, and the ray flowers are small, hardly larger than the disk flowers. The plant flowers from June to October, and seeds from July to November. Its distribution is general throughout the U.S., an exceptionally common and abundant weed. It takes over abandoned fields quickly, particularly in the summer. Aside from its common name of horseweed, the plant is otherwise known as "Canada Fleabane" and "Mare's-Tail."

Damage Done by Horseweed

This aggressive weed is quick to "take over" pasture lands, crowding out valuable plants and, of course, using water, light, and soil nutrients that could be put to much better use for the furtherance of other crops.

Habits of Horseweed

An annual plant, horseweed is reproduced by seeds. Although it is native to grassland, it spreads freely to waste places, including roadsides, fields and gardens. A large number of tiny white flowers are produced by each plant, and the flowers form a loose head on the top of the plant. The seeds are slightly curved, and have a number of parachute-like yellowish-brown bristles on one end which allows them to be carried by the wind, thus spreading the plant over much broader areas.

Control of Horseweed

Both chemical herbicides and cultural methods may be employed for control of this weed. In the latter, state authorities have recommended that the plants be mowed when the first flowers appear, thus preventing seeds from being produced. Since horseweed appears largely in pastures, chemical control comes under provisions of Federal Law regarding residue tolerances. Although there are a number of effective chemical compounds available for control of horseweed, their use should be undertaken only after consultation with local authorities.

Illustration of Horseweed furnished Croplife through courtesy of U.S. Department of Agriculture.

INSECT NOTES

(Continued from page 5)

to occur on evenings when temperatures are above 60 degrees F.

Stink bug (Pentatomids) populations in peach orchards vary extensively. Sucking punctures in an abandoned orchard were observed May 5. Populations are expected to increase when the weather warms up.—D. W. Hamilton.

Illinois Farmers Advised To Treat Against Wireworm

URBANA, ILL.—Overwintering eggs of spittlebugs are hatching in the east side of Illinois south of Route 36, and the hatch was expected to be completed shortly. Some fields were said to be sufficiently infested as to require treatment. Economic infestations of spittlebug may be quite common in the northern area of the state this year.

Farmers preparing fields for planting corn were advised that control of wireworms and rootworms should be considered. Applications of aldrin or heptachlor were suggested either with fertilizer or alone.

Some reports of damage to clover by the clover leaf weevil have been received. In general, however, populations are lowest for several years and control measures are not needed except in some instances where populations of the larvae exceed 20 per square foot.—H. B. Petty.

Florida Reports Winter Failed to Stop Bugs

GAINESVILLE, FLA.—Apparently the cold winter experienced in Florida this past season has had little effect on reducing insect populations in the state, according to R. E. Woodruff, USDA entomologist here.

Reports from the state indicate that slugs and pillbugs were worse this year in the plant beds than in 1957; cutworms have been causing moderate damage to newly set tobacco in the shades; and cabbage loopers are appearing in the shades and are about two weeks earlier than in 1957.

In general, the insect problems are greater this year due to the late transplanting date. The destructive potential of the green peach aphid is still as great as ever. No reduction seen in the aphid's reproductive rate due to the cold winter.

Green peach aphid averaging 10 per plant on 300 inspected was infesting Dixie shade tobacco plant beds which had received no insecticide at Havana, Gadsden County. Aphid potential still as great in 1958 as in previous years.

Tobacco flea beetle in adult stage averaging 7 per plant on 200 inspected was infesting Dixie shade tobacco plant bed which had received no insecticide and was doing extensive damage at Quincy, Gadsden County.

Seed Corn Maggots Threaten in Colorado

FORT COLLINS, COLO.—Threats of insect damage to newly-seeded sugar beets, corn and beans were seen in northern Colorado. Encouraged by cool, wet spring days, the seed corn maggot has made an early appearance, especially in Weld County, according to the April 29 report of the Colorado Insect Detection Committee.

A bait trap at Severance in Weld County trapped 300 adults of the seed corn maggot in a 7-day period, while 170 were caught at Eaton and 124 near Greeley.

A high population of the sugar beet webworm is a strong possibility in the San Luis Valley this summer. Webworms that survived the winter now average between eight and several hundred per square foot. Disease and parasites may reduce the population, however.

In Rio Grande County the army cutworm and other cutworms have invaded alfalfa fields. Field surveys showed a count of eight per lineal foot. Damage from the western wheat stem maggot was reported in the Briggsdale area of Weld County. In Larimer County the army cutworm has caused serious damage locally to alfalfa, especially new seedings.

The peach twig borer is becoming active in Mesa County. On April 20 observers noted injury on new shoots in peach orchards. Pear leaf blister mites have been observed in orchards which were heavily infested during the 1957 season. In fields near Mack and Fruita (Mesa County), alfalfa weevil larvae have been taken at the rate of three per 100 sweeps. First pea aphids of the season were observed in alfalfa in the same areas.

COLORADO BOOKLET

FORT COLLINS, COLO.—Colorado State University has issued a new booklet entitled "Insect Control Recommendations for 1958."

USDA Says Herbicide EPTC Effective in Weeding Strawberries

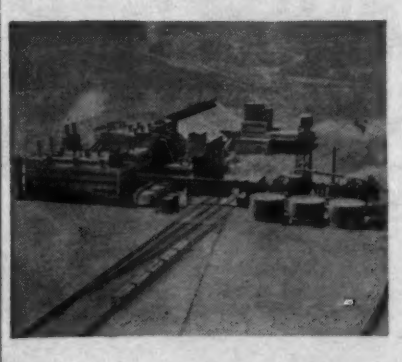
WASHINGTON—The U.S. Department of Agriculture said May 1 that appraisal of the new herbicide EPTC may result in "more effective and lower-cost weed control in strawberries and vegetables, without injury to these crops."

Preliminary experiments conducted at USDA's Agricultural Research Center, Beltsville, Md., with EPTC (ethyl N, N-di-n-propylthiol-carbamate) demonstrated its effectiveness in controlling weeds in several different crops. Also indicated by the experiments was the prospect of reducing weed-control costs in these crops, USDA said.

In experiments on weeds in strawberries, the researchers found that over-all sprays of EPTC at the rate of 5 to 10 lb. per acre effectively controlled annual grasses and broadleaved weeds. The spray was applied about one month after setting the strawberry plants, and they were not injured by the herbicide.

In New Jersey, Maryland and Texas experiments, EPTC was applied as an over-all spray on tomatoes following the last cultivation. The chemical gave good control of annual grasses and certain broadleaved weeds until harvest of the tomatoes was completed. No injury to the tomato plants was attributable to use of the herbicide, USDA said.

The researchers found that vegetable leaf, salad and cole (cabbage) crops were more tolerant to preemergence sprays of EPTC during cool weather than at other times. Research on this new herbicide is being continued to determine its practical field use under a wide variety of soil and climatic conditions.



Never a delivery worry!

We've expanded our plant facilities to whittle down delivery schedules ... to ship Run-of-Pile Triple Super *when*, *where* and the *way* you want it. Try us. We deliver the goods!

Davison's new Run-of-Pile Triple Superphosphate is guaranteed to satisfy you on every count!

- BETTER AMMONIATION RESULTS—Because of its friable texture, this triple super has a high rate of ammoniation . . . absorbs more pounds of free ammonia per unit of P_2O_5.
- HIGH IN P_2O_5 CONTENT—Constant high analysis . . . 46-48% A.P.A.
- STORES BETTER—This triple super is shipped in excellent mechanical condition. It is well cured, and milled and screened at time of shipment.
- UNEXCELLED QUALITY—This triple super is backed by Davison's more than a century of experience in fertilizer formulation. It's guaranteed to satisfy you on every count.
- IN STOCK AND READY TO GO—We're ready to ship Davison Run-of-Pile Triple Superphosphate by rail, ship or barge. Write or call today!

DAVISON
CHEMICAL COMPANY
Division of W. R. Grace & Co.
Baltimore 3, Maryland

REGISTRATION

(Continued from page 7)

use has become standard practice. These materials are commonly sold by the same firms that market other pesticides and fertilizers, they are applied in the same manner and with the same equipment as pesticides and fertilizers are applied, and in some cases they are applied in combination with other pesticides or fertilizers.

If a chemical increases the yield of a crop or improves the quality of a crop, a farmer is not likely to distinguish between the way in which the chemicals act. It is reasonable to expect that the laws will provide the same type of control over all of them.

California law defines fertilizing materials as "any substance of mixture of substances intended to be used for promoting or stimulating the growth of plants, increasing the productiveness of plants, improving the quality of crops or producing any chemical or physical change in the soil." It then defines five types of fertilizing materials as follows:

"(a) 'Commercial fertilizers' are substances and mixtures of substances containing 5% or more of nitrogen, available phosphorus pentoxide, or potassium oxide soluble in distilled water, singly, collectively or in combination, except manures, hays, straws, peat and leaf mold.

"(b) 'Agricultural minerals' are mineral substances, mixtures of mineral substances, and mixtures of mineral and organic substances, containing less than 5% in available form of nitrogen, phosphorus pentoxide, or potassium oxide, singly, collectively, or in combination, except sand and soil.

"(c) 'Manures' are the excreta of domestic animals or domestic fowls when not artificially mixed with any material or materials other than those which have been used for bedding, sanitary or feeding purposes for said animals or fowls or for the preservation of manure.

"(d) 'Auxiliary plant chemicals' are substances such as hormones, auxins, enzymes, synthetic polyelectrolytes, biocatalytic soil conditioners, lignin or humus preparations, wetting agents to promote penetration of irrigation water, materials for reducing preharvest drop of fruit, materials for promoting rooting of cuttings, bacterial inoculants, and similar products intended to be used for influencing plants or soils.

"(e) 'Soil amendments' are all substances, except those included within subdivisions (a), (b), (c), and (d), and include hays, straws, peat, leaf mold, sand, mixtures intended for use solely as potting media, and mineral substances such as diatomite, vermiculite, perlite, pumice, and clay which are intended for use solely because of their physical nature and with no claim for chemical constituents."

The class of auxiliary plant chemicals was added to the law in 1945 and expanded in 1957 to keep in step with developments in this type of agricultural chemical. Many of the newly developed chemicals are in this class.

The Agricultural Code defines economic poisons, or pesticides, to include:

". . . any substance, or mixture of substances, intended to be used for defoliating plants, or for preventing, destroying, repelling, or mitigating any and all insects, fungi, bacteria, weeds, rodents, predatory animals or any other form of plant or animal life which is, or which the director may declare to be, a pest, which may infest or be detrimental to vegetation, man, animals or households, or be present in any environment whatsoever."

This law also has been amended from time to time to keep abreast with development of new products. In 1949, after many spray adjuvants began to be marketed in the same channels of trade with other pesticides and for use with these products, the law was amended to state that spray adjuvants are pesticides and are subject to the same requirements.

The law defines spray adjuvants as including any wetting agent, spreading agent, deposit builder, adhesive, emulsifying agent, deflocculating agent, water modifier, or similar agent, with or without toxic properties of its own, intended to be used with another pesticide as an aid to the application or effect thereof, and sold in a package separate from that of the pesticide with which it is to be used.

In 1951, substances intended to be used for defoliating plants were specifically included in the law. The law states that defoliating includes the killing or artificially accelerating the drying of plant tissues, with or without causing abscission.

Although nearly all states have a fertilizer law and a pesticide law, the scope of the laws differs. Apparently many of the new types of agricultural chemicals are not widely used in all parts of the country and they have not been a matter of much concern elsewhere. Recently national interest in some of these products has increased. The various industries concerned and the regulatory agencies of the various states and the federal government are now considering how the products should best be handled from the regulatory standpoint.

Some groups would like to have all these new types of agricultural chemicals classified as pesticides. They point out that there is a federal law on pesticides and a national Association of American Pesticide Control Officials, which could handle the registration and regulation of these materials uniformly throughout the country if they were classed as pesticides.

On the other hand, although most of the states have similar laws with regard to fertilizing materials, and there is a national Association of Fertilizer Control Officials to facilitate uniform state actions, there is no federal fertilizer law and opinion is divided on whether such law should be encouraged.

However, one of the main reasons for wanting these new materials to be regarded as pesticides is that action could then be taken through the machinery of the Miller Bill to secure appropriate action on any tolerance that might be needed. The Miller Bill amendment to the Federal Food, Drug, and Cosmetic Act has established a well-functioning petition procedure for securing action on tolerances for residues of substances that are included in the scope of the Federal Insecticide, Fungicide, and Rodenticide Act. Defoliants, and substances for controlling nematodes, snails, slugs, algae, moles, birds, and certain other pests are not registrable under the federal law as pesticides and, therefore, tolerances cannot be secured through the Miller Bill procedure. Tolerances for these other products can be secured through a hearing procedure provided in the federal law, but industry has been reluctant to utilize this means.

However, it does not seem reasonable to drag into the scope of a pesticide law a number of agricultural chemicals sold for other purposes merely to facilitate action on tolerances which can be handled in other ways.

Dual Registration

When a firm deliberately prepares a mixture of a fertilizer and a pesticide to serve a dual purpose, it does not seem greatly out of line to require duplicate registration with payment of duplicate fees and to require the label to show two statements of ingredients. But as more and more dual-type products appear on the market the reasonableness of the present legal requirements becomes more and more questionable.

If maneb controls fungi and alleviates manganese deficiency, the present laws, operating independently, require the firm that markets it to register it both as a pesticide and as an agricultural mineral and pay both fees.

There are several differences between legal requirements for fertilizers and these for pesticides. A tonnage license tax, but no sales tax, is paid on agricultural minerals or commercial fertilizers and a sales tax, but no tonnage license tax, is paid on pesticides in California.

The guaranteed analysis of a fertilizing material is commonly expressed in terms of equivalents—elemental nitrogen, phosphorus pentoxide, and potassium oxide. The statement of ingredients in a pesticide commonly shows the name of and percentage of each active ingredient and the total percentage of inert ingredients.

The labels of fertilizers rarely show any directions for use. The labels of pesticides must show adequate directions for use.

Physical form of a fertilizing material is generally of secondary importance. Physical form of a pesticide dust is of major importance.

The title of this paper is the question, "Fertilizer or Pesticide?" It has not provided an answer to this question or even clarified the situation. It has only attempted to document the confusion that exists and to give a few examples to indicate that many of the agricultural chemicals that are appearing on the market, and that will appear in the coming years, are in the twilight zone between simple nutrients, like NPK, and simple pesticides, like DDT.

It is quite evident that every function and development of plants and animals may, and probably will be, subject to control by chemicals. It seems possible that relationships will be found between the nutrition of plants and their resistance to pests. Probably at some future time laws will be developed to incorporate in one text the chemicals that are used for their nutrient value, the chemicals that are used to kill pests, and the other chemicals that are used to influence soils, plants, and animals in many additional ways. With such an inclusive law we would not have to decide whether registration should be secured as a fertilizer or as a pesticide when someone markets for the first time a multiple-use material.

Dr. Gustav M. Watkins

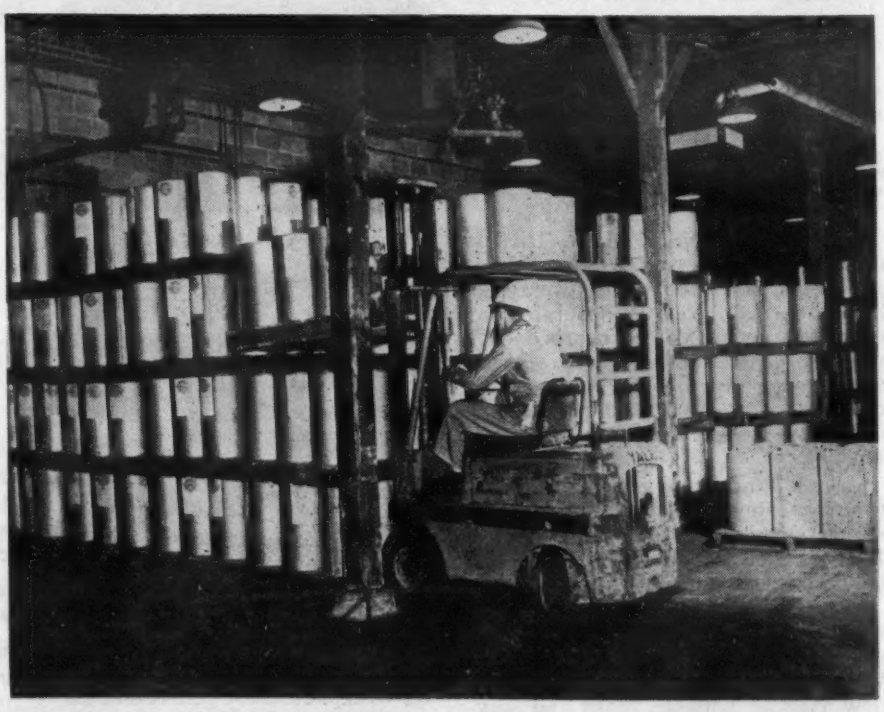
DEAN APPOINTED—Dr. Gustav M. Watkins, professor and head of the department of plant physiology and pathology at the A&M College of Texas, has been named dean of the college's School of Agriculture, effective July 1. A 50-year-old native Texan, Dr. Watkins is a nationally known authority on plant diseases and the author of many well known research publications in this field. He has headed the department of plant physiology and pathology at Texas A&M since 1950.

MCA Honors College Chemistry Teachers

WASHINGTON — Six outstanding teachers in the field of undergraduate chemistry have been named to receive awards of $1,000 each under the Manufacturing Chemists' Assn.'s 1958 College Chemistry Teacher Awards Program.

The awards, first made in 1957, are presented to teachers adjudged to be ". . . personally responsible over a period of years for inspiring and holding the interest of students in the field of chemistry." Each award includes a medal and a citation.

Recipients of the awards are Dr. Paul Winslow Boutwell, Beloit College, Beloit, Wis.; Dr. Elizabeth Dyer, University of Delaware, Newark, Del.; Dr. Carl Waldo Holl, Manchester College, North Manchester, Ind.; Dr. Sherwin Maeser, Utah State University, Logan, Utah; Dr. Jesse LeRoy Riebsomer, University of New Mexico, Albuquerque, N.M., and Dr. Arthur Eugene Wood, Mississippi College, Clinton, Miss.



HEPTACHLOR SHIPMENT—Shown above is part of a shipment of 150 metric tons of technical heptachlor for the Argentine government. Velsicol Chemical Corp., Chicago, reports that the Argentina Ministry of Agriculture will use a substantial part of the shipment for grasshopper control.

NEW ENGLAND NEWS NOTES

Contract Farming Makes Only Small Impact in Massachusetts

By GUY LIVINGSTON
Croplife Special Correspondent

Farming in Massachusetts is no longer being seen as "a way of life," but as a business. Contract farming is one of the more modern reasons for this new trend. Contract farming, farm experts here point out, a form of controlled production, takes place when a big canning company signs a contract with a large tomato farm offering to purchase all of the tomatoes at a specified price for a definite length of time.

Four advantages to contract farming were cited. It gives security to all concerned; farmers may operate on someone else's capital; consumers are awarded by receiving the products at a less expensive price, and all parties are helped in planning for future needs.

However, Massachusetts has not been affected to any great degree by this new economic development, according to John W. Hough, specialist at the University of Massachusetts. The main reason for this, he says, is that farmers in expanding agricultural areas are more receptive to change and new ideas than the conservative New England farmers.

"There is at least one disadvantage to the contract system," he explained. "In most cases the farmer loses his right to make decisions with regard to the operation of his farm and the products he will produce."

Dutch Elm Disease

An attack on the Dutch Elm disease which infected 93 trees in Framingham, Mass. was carried out by Supt. Anthony Membrino. A 12% solution of DDT was sprayed on all the city's elm trees. The work was started at midnight to lessen interruptions due to traffic and parked cars, permitting complete spraying of every tree.

This is the period when all out war on the elm bark beetles is underway in Massachusetts. Seasonal control of Dutch elm disease and insect pests of elms in the state calls for experimental spraying of valuable healthy elms to effectively reduce twig feeding by elm bark beetles where local Dutch elm disease conditions are bad.

Research Report

Issued by the National Academy of Science in India, a special research report by two University of Massachusetts staff members has been reprinted and is being given wide distribution in India. Dr. Joseph E. Steckel, agronomy department, and Dr. Dale H. Sieling, dean of the College of Agriculture, are co-authors of the report entitled "The Chelation of Organic Substances—A Factor in Phosphate Availability."

The report was prepared for and read at the silver jubilee of the Indian National Academy of Science at Lucknow University, India. Just issued in printed form, the paper states that growing plants derive more phosphate from the soil in the presence of certain organic compounds—known as "chelating" or grasping agents—than they do when these substances are absent.

Oldest Agricultural Club

The oldest agricultural club in America met for the 900th time in the Campus Room of Massachusetts Institute of Technology, Cambridge, Mass. The Massachusetts Agricultural Club, 118 years old, had as guests the six New England state commissioners of agriculture.

The club was founded April 4, 1840 by farmers, produce buyers and others who met in the Faneuil Hall, Boston, market. The original membership was limited to 18 when the 13 charter members met in the Old Exchange Coffee House in Boston. But since then the ranks have swelled to 45. At first meetings were held monthly, but currently they are held five times a year. The original purpose was to discuss farming subjects, current events and perhaps politics.

A seminar on controlled atmosphere (CA) storage, a method designed to increase the life of apples year round, was held at the University of Massachusetts in Amherst with over 100 attending comprising growers, contractors and commercial suppliers. Frank W. Southwick, horticulture department; and John W. Zahradnik, agricultural engineering, who pioneered the CA storage concept in Massachusetts, outlined specifications for management and construction based on their research.

Discussion topics included insulation and vapor barriers, refrigeration, air cleansers and construction as part of the CA storage picture.

Apple Storage Seminar

Massachusetts has 12 CA storage plant owners with a total of 22 rooms and storage capacity for 192,000 bushels of apples. CA storage involves an air tight room in which an artificial atmosphere is created. The fruit is held at a temperature of 38°. The result: Longer life and apples the year around.

Stanley C. Smith Succumbs in Chicago

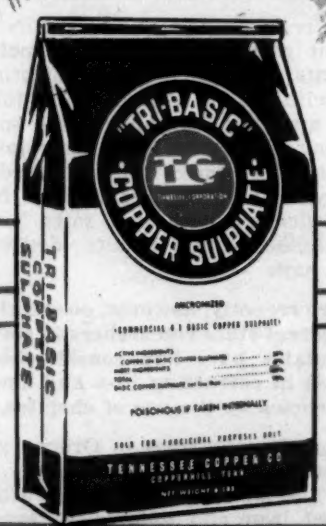
CHICAGO—Stanley C. Smith, 58, general sales manager, plant food division, Darling & Co., Chicago, died at his home May 3 as a result of a sudden heart attack. He had been actively at his work the previous day.

Mr. Smith had been with Darling & Co. for over 30 years and was widely known in fertilizer industry circles. He is survived by the widow, Mrs. Margaret Smith; one son, Douglas of Chicago; and one daughter, Mrs. Shirley Gibbs, Madison, Wis. Funeral services and burial were held May 5 at Chicago.

Factory Agent

LOS ANGELES—The Poulsen Co., Los Angeles, engineers and manufacturers of materials processing and handling equipment, has been appointed direct factory agents for the W. J. Fitzpatrick Co., Chicago, designers, developers and exclusive manufacturers of FitzMill industrial processing machinery. The Poulsen firm for more than 21 years has designed and manufactured material processing and handling equipment for the food, chemical, fertilizer and other industries.

TRI-BASIC COPPER



The Versatile Fungicide

Longer Protection
Easy to Apply
Economical
Upgrades Quality of Fruits & Vegetables
Longer Shelf Life
Corrects Copper Deficiencies
Effective Control
Always Dependable
Compatible
Plentiful Supply

You get so many more advantages with Copper fungicides—used as a spray or dust on practically all truck crops in the control of persistent fungus diseases—Tri-Basic provides control of citrus and grape diseases, also on many deciduous fruits—Tri-Basic has excellent adherence qualities and protects longer—lower disease control cost—greater yield of top quality produce.

Is there another Fungicide offering these advantages?

TRI-BASIC COPPER SULFATE

Quality Controlled from Mine to Finished Product

For further information please make requests on your company's letterhead.

TENNESSEE TC CORPORATION
617-620 Grant Building, Atlanta, Ga.

COTTON

(Continued from page 1)

the lower levels of support—the 65-70% provision—into the open market.

This type of legislation with some possible minor adjustments represents a recognition on the part of the cotton industry that the remaining walls of rigid high price supports and its acreage allotment counterpart are about to crumble and disappear.

wide bi-partisan backing—it may mean that similar action will shortly follow for wheat and other high price supported commodities.

Already the rice industry has entered its open recognition of this condition and is now asking for lowered price supports.

The cotton industry action seems to point up a general direction which can only have important connotations for the other price supported crops.

Those connotations are an ultimate ending of acreage allotments, a freeing of individual farm initiative and farm managements for all crops and the lowering of price supports down to some insurance level to protect the farm producer from exposure to the full blow of winds in the market place.

This opens the door wide for the farm chemical industry sales forces to press home the necessity of wider and more adequate use of chemicals to lower the individual per unit costs of production of a crop.

As the cotton industry swings into line behind a common legislative program, it is learned from reliable sources in Congress that such a bill as outlined above is probable of adoption by Congress at this session.

ICC

(Continued from page 1)

this Senate subcommittee headed by George Smathers (D., Fla.), the Senate would be asked to freeze at this time the list of commodities and items which would still be exempt from ICC rate controls in motor truck shipments in interstate commerce. However, the Smathers proposals would exclude frozen fruits and vegetables from the agricultural haulers' exemption and also would exclude imported agricultural commodities.

It is expected here that the Smathers committee report will be the index of legislative activity in this specific item this year.

However, on the subject of regulation of private carriers—trucks owned by a private company primarily for shipments of its own goods or products—the Smathers committee has accepted the recommendations of the ICC to bring for-hire use of such vehicles under economic regulation—which means in general terms—subject to ICC rate controls.

This issue of the private carrier has been intimately associated with the agricultural haulers' exemption as well as the application of the excise tax on all transportation.

The Smathers subcommittee has asked the Senate finance committee to examine the excise tax operations with a view to recommending its elimination or repeal at this session of Congress.

Railroad and transportation legislation such as mentioned above is also pending in the House but the Senate has assumed leadership in acting. Considering the influential position of Sen. Smathers it should be considered probable that Senate recommendations and actions will be the guide to be followed by the House.

CHELATES

(Continued from page 1)

by the research-backed and far more efficient method of providing metal nutrients by spraying or injecting trees with salts of the needed metals, or by applying the salts to the soil. Spraying with zinc salts has been fairly satisfactory for correcting zinc deficiency, but spray treatments for iron deficiency with iron salts have not produced the results desired, USDA says.

More recently, however, cooperating federal-state researchers in several states have had considerable success in correcting iron and zinc deficiencies by the use of chelates.

Chlorotic pear trees in Oregon responded by improved greening of leaves and increased fruit yields after chelated iron and manganese spray treatments. Soil-applied chelated zinc gave better results in the treatment of peach and sweet cherry trees in Washington State than the zinc-sulfate sprays normally applied in early spring to correct zinc deficiency, according to USDA.

Zinc deficiency—common in apple trees in the Pacific Northwest—may be corrected by the use of zinc chelates in combination with other treatments for this condition, USDA scientists found. In this experiment, a very severe condition was corrected by using a zinc-chelate spray in the growing season combined with zinc-sulphate sprays in the fall and spring.

In Louisiana experiments on pecan trees, soil treatments with zinc chelate and zinc sulfate proved equally successful for a 3-year period in checking "pecan rosette" caused by zinc deficiency. Quantities of the chelated zinc used were smaller by far than the sulfate required, but both varied considerably in quantity requirements as between the size of the trees and the soils on which they were used.

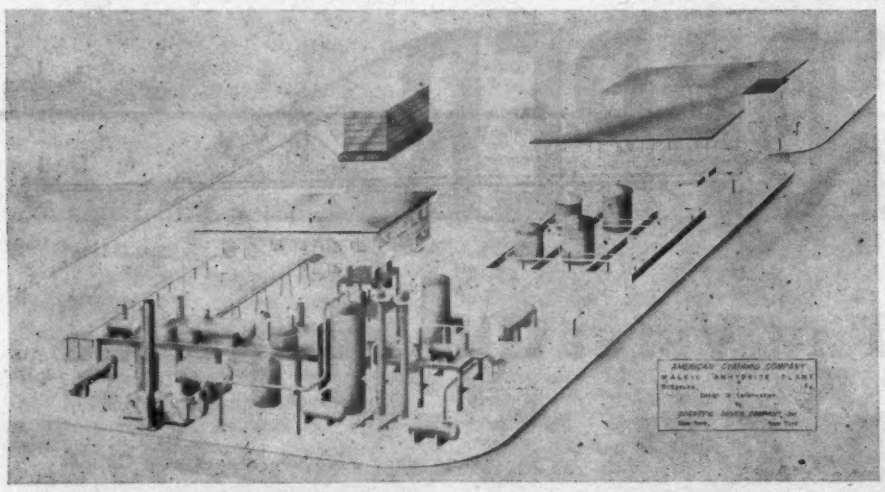
Lime-induced iron chlorosis in citrus trees is being successfully combated in Texas and California by the use of iron chelate treatments on the soil.

Other experiments have shown that blueberries, normally at home in acid soils, can be grown in mildly acid or neutral soils if chelated iron is applied to the soil. This material is also being used extensively by nurserymen and gardeners to combat chlorosis in azaleas, roses, rhododendrons and other ornamentals.

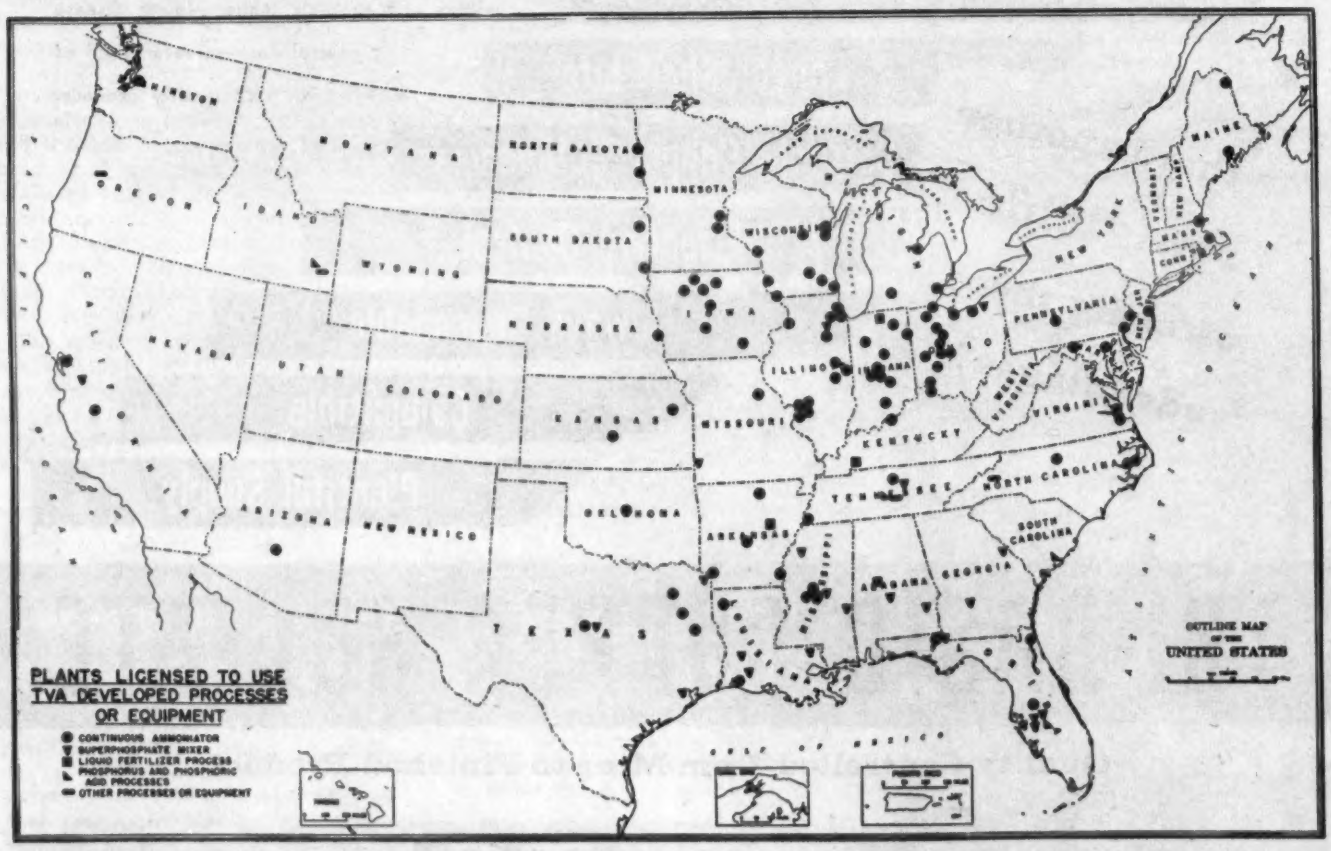
Current USDA research includes work with experimental chelates as well as with those commercially available. Practical chelated-metal treatments are being developed to suit specific plants in specific soil situations.

The present high cost of chelated metals limits their use generally to the treatment of crop trees, ornamentals and other high-value plants. USDA research is devoted mainly to the use of these materials on crop trees but some work is directed also toward determining the effectiveness of chelates in combating nutrient metal deficiencies in other plants.

USDA and state researchers are seeking answers to several major questions: (1) How do chelates function in plants? (2) What is the fate of a chelate in plant tissue? (3) Why are some chelated metal treatments harmful to plants? (4) What biochemical principles are involved in the ability of some plant species and varieties to resist chlorosis under adverse growing conditions? (5) How can chlorosis resistance be developed and used to strengthen the line of defense against nutrient deficiencies of plants?



MALEIC ANHYDRIDE PLANT—Construction is to begin this summer on American Cyanamid Co.'s multi-million dollar maleic anhydride plant at Bridgeville, Pa. It will be adjacent to the company's present production facilities there. Initial production capacity is scheduled for 14,000,000 lb. annually when the unit is completed (artist's drawing) and in operation late next year. At present Cyanamid is the largest consumer of the chemical in the U.S. See story on page 1.



USE OF TVA PROCESSES—Locations of plants licensed to use Tennessee Valley Authority processes or equipment are shown on the above map. Included are the continuous ammoniator, the superphosphate mixer, a liquid fertilizer process, phosphorus and phosphoric acid processes and other processes or equipment.

The most widely applied development, as shown by its use in well over a hundred plants, is the TVA-type ammoniator granulator. TVA says that about two thirds of the country's granular fertilizers are made in this type of equipment.

CYANAMID

(Continued from page 1)

an increase in capacity if and when needed.

With the unit's completion, it is expected that 30 employees will be added to the Bridgeville staff, bringing total employment there to approximately 600 people.

This project will be executed under the supervision of Cyanamid's engineering and construction division which has engaged Scientific Design Co., Inc., New York, to design and construct the new process facilities.

Robert Kennel Joins Pennsalt Sales Staff

TACOMA — Addition of Robert Kennel to the agricultural chemicals sales staff of Pennsalt of Washington Division, Pennsalt Chemicals Corp., was announced recently by William S. Formwalt, general manager of agricultural chemicals.

Mr. Kennel, a graduate of Long Island Agricultural College, was engaged in selling agricultural chemicals in the northeastern section of the U.S. for five years before joining Pennsalt. He will be Pennsalt's agricultural chemicals sales representative for the New York and adjoining areas and will report to Pennsalt's Aurora, Ill., office. Mr. Kennel will establish his office at Port Jefferson, N.Y.

U.S. District Judge Finds Former Monsanto Employee Revealed Trade Secrets

SALT LAKE CITY, UTAH—Judge A. Sherman Christenson, U.S. District Court of Utah, after a four-week non-jury trial, found on April 26 that Charles M. Miller, engineer formerly employed by Monsanto Chemical Co., had unlawfully revealed trade secrets belonging to Monsanto. Mr. Miller was charged with having revealed these secrets to Central Farmers Fertilizer Co., a wholesale cooperative engaged in the manufacturing and distribution of fertilizers to fifteen agricultural cooperatives located in the middle west.

Judge Christenson's finding was part of a 47-page transcript of comments made by him at the end of the trial which had been conducted behind closed doors because of the confidential nature of testimony given. Monsanto filed the suit some 17 months ago.

The suit asked for an injunction and damages against the defendants. Beside Mr. Miller, defendants included the F. C. Torkelson Co., consulting and designing engineers, and Central Farmers Fertilizer Co., an Illinois corporation authorized to operate in Idaho where it is now building a $14 million fertilizer plant near Georgetown.

Joseph J. Lanter, president of Central Farmers, Chicago, has stated that the cooperative would continue in its plans to build the Idaho plant. The cooperative was also named a defendant in the original lawsuit, but was not served with a summons and made no appearance at the trial.

Similar action against Central Farmers, also brought by Monsanto, is pending in the U.S. District Court in Pocatello, Idaho.

In the matter of damages, if any, the court reserved jurisdiction of the case. A tentative date for officially issuing injunctions was fixed for June 21 at 2:30 p.m., at the Salt Lake Federal Buildings Courtroom.

NPFI to Support Fertilizer Research in Six Midwest States

WASHINGTON—Financial grants to six states to support research projects in developing new information on profitable response to fertilizer use in the Midwest have been announced by the National Plant Food Institute.

Projects supported by the Institute include research in Indiana, Kentucky, Michigan, Minnesota, Missouri, and Wisconsin.

In Indiana, the Institute is supporting in part a cooperative project between the agronomy department and the agricultural economics department. The objective is to measure response to fertilizer applications and to evaluate this response in economic terms.

In Kentucky, research is underway on the response of crops to increments of fertilizer: attempting to obtain the upper limits of yield per acre and relating these to economic factors.

For Michigan, arrangements have been made with the soils department and the economics department to support research work measuring crop response to fertilizer and evaluating the response in economic terms.

The Institute is supporting demonstration work in Minnesota on pasture fertilization under the direction of C. A. Simkins, extension soils specialist, and Ermond R. Hartmanns, agricultural economist.

In Missouri, financial grants by the Institute have been given for demonstration projects where needed and for fertilizer research work in general; and in Wisconsin, Institute financial support is given to the demonstration program conducted by Professor C. J. Chapman on corn, pasture and small grains.

Wet Weather Plagues Mid-South Farmers

MEMPHIS — Mid-South cotton growers have been battling the weather the past several weeks to get land prepared and crops planted. Now they are faced with a fight against both the elements and time.

Flooding rains have destroyed thousands of acres of early planted cotton in many areas of Arkansas, Mississippi, Missouri and West Tennessee, officials report. They add that only hot clear weather during the next few weeks will brighten the gloomy picture confronting the cotton growers.

Presently, the outlook is far from bright. At the beginning of the second week in May rain was falling over most of the area, and the forecast called for more of the same. Officials estimated that even after the rain stops, it will be at least ten days before farmers can work their fields.

C. A. Vines, associate extension director in Arkansas, said that the period between May 20 and June 1 will be critical. That's the latest date growers can plant cotton and expect a normal yield. He pointed out that late planting with a late fall would be beneficial but that an early fall would bring serious crop losses.

Cotton planted in the Delta areas ranges from 30 to 50% in Arkansas and 50 to 55% in Mississippi. Extension officials said from 90 to 100% of this must be replanted. The cost of replanting ranges from five to eight dollars per acre. Officials feel there will be enough seed for replanting although a good portion will be low in germination.

In West Tennessee, H. T. Short, district extension agent, Jackson, reported that very little work has been done. Some small acreages of cotton and corn have been planted. All or most of it must be replanted, he said. In Southeast Missouri little cotton has been planted.

Reports indicate little soybean planting has been made. Rice in Arkansas and Mississippi has been planted and is grassy. Truck crops, such as tomatoes, have been hampered greatly, and if rains continue strawberries will be damaged and delayed. Small grains have been growing well, especially on well-drained soils, but—like cotton and corn—have suffered from excess water on lowlands.

Farmers are looking to their mechanized equipment to pull them out of the hole, according to reports from several states. Some plan to work nights when they can get in the fields.

DELTA APPOINTMENT

BATON ROUGE, LA. — Appointment of Lewis W. Lubenow as sales manager for the semi-bulk handling department of Delta Tank Manufacturing Co., Inc.'s materials handling equipment division has been announced here by Hal S. Phillips, president. Mr. Lubenow will headquarter at Delta's New York City office, 122 E. 42nd St.

THE MAN WITH THE MULTIWALL PLAN

UNION
PACKAGING SPECIALIST
JACK WHITE

saves
Multiwall
user $15,000
to $20,000
a year

You might call it a Multiwall "triple play." Jack White, Union Packaging Specialist, helped turn the trick for a Southern packer recently. Annual savings will total between $15,000 and $20,000.

At the company's invitation, Jack White put Union's 5-Star Packaging Efficiency Plan to work and made a detailed analysis of the existing bag designs.

His recommendations for more economical operation included: (1) Standardizing the firm's packaging line by converting all the Sewn Valve bags to Pasted Valve bags which led to more efficient palletizing and warehousing. (2) Simplifying and reducing bag print copy to a less expensive, faster reading identification print.

Union Multiwall Recommendations are based on this 5-Star Packaging Efficiency Plan

- DESIGN
- EQUIPMENT
- CONSTRUCTION
- SPECIFICATION CONTROL
- PLANT SURVEY

Union's 5-Star Packaging Efficiency Plan may help you save money on your Multiwalls. This comprehensive packaging service is yours at no cost or obligation—regardless of the brand of Multiwalls you now use. Why not look into it soon.

Better Multiwall performance through better planning

union camp

UNION'S PACKAGE ENGINEERING DEPARTMENT will study your Multiwall bagging methods and equipment and make appropriate recommendations, regardless of the brand of Multiwalls you are now using.

UNION MULTIWALL BAGS
UNION BAG-CAMP PAPER CORPORATION
233 BROADWAY, NEW YORK 7, N. Y.

Croplife®

A WEEKLY NEWSPAPER FOR THE FARM CHEMICAL INDUSTRY

The regional circulation of this issue is concentrated in the Northeastern states.

"KNOW YOUR OVERHEAD COSTS . . ."

Business Head Says Merchants Are Kidding Themselves in Cutting Price to Make Sale

IN a year when the spectre of recession and a slackening down of business hangs over the horizon, it is even more important than usual for any firm in the fertilizer and pesticide business to know, without much degree of guessing, what its gross and net profits actually are.

Some firms seem to do business at the pace set by competitors. If competitor "A" cuts price, others follow suit. The inevitable result is that buyers lose respect for suppliers, and profits are apt to shrink to the point of being non-existent.

In the case of fertilizers, many in the industry tote up the tonnage sold this year as compared to last, and by that criterion judge whether or not ground has been gained. A tonnage-happy outlook isn't the true measure of success, however. The real test is, "Did we realize as much profit as we did last year?" Reminds us of the old saw in which the befuddled merchant observed, "We lose just a little on each sale, but we do a whale of a volume!"

The head of an eminently successful firm in the trade gave us the benefit of his own business philosophy in a letter the other day. We feel that it is worth passing on to our readers. He said, incidentally, that he maintains good relations with his competitors and keeps the communication lines open so they can discuss matters of mutual concern. "We have no hesitancy in calling any of our competitors and asking for information about something which has been reported to us which does not seem quite ethical. By the same token, our competitors have not hesitated in calling us, either. We believe this is the basis on which people in the same industry should act. It is our firm conviction that the other fellow is just as ethical and high-minded as we are."

This business man also expressed himself well on other phases of doing business in the fertilizer and pesticide trades. "I have been forced to the conclusion that too many people in business don't really understand what overhead is, and are kidding themselves when they cut prices to meet competitive situations, either fantastic or real. Sales managers are too prone to jump to conclusions when one of their salesmen reports that such and such a company is quoting ridiculously low prices.

"Again, unfortunately, too many sales managers, or even the heads of businesses, need a ramrod up their spines. In plain English, they haven't got the guts to stick to a policy. Again unfortunately, not all low prices quoted by a prospective buyer are factual; too many salesmen don't give the buyer credit for being just as smart or smarter than are the salesmen, and forget that many of them will quote fictitious prices in their endeavor to buy for less money.

"From the inception of our company we adopted a one price policy from which we never vary. We build our fertilizer and insecticide formulas to meet requirements and price them accordingly, and we never figure a formula to meet competitive prices. What little success we have had has been due to the basic practice of making the best product we know how to make and pricing it to carry a legitimate margin.

"I have often told our salesmen that if we were the only company in the field we would not get all the business. There are some people who just don't like us, others who prefer doing business with the company to whom they look for the making of their requirements, just as some of our customers prefer to deal with us. However, regardless of whether they like us or do business with us they must respect us.

"Too many of our customers who, because they are users of substantial tonnages, feel they are entitled to a better price. I have told them that they will never pay us any more or any less than any other customer.

"We have lost the sale of literally thousands of tons of fertilizer, thousands of gallons of emulsions and hundreds of thousands of pounds of dust because of this policy. We never worry about it. It is our feeling that there are enough people who appreciate top quality as well as constructive field service to do business with us."

American Science Still Tops

"One of the favorite topics of discussion today is Russian science. Many have been led to believe that their great accomplishments are the result of a controlled state. I do not understand how anyone familiar with scientific method or thinking can believe this. The answer lies much closer to the fact that the Russian have done a marvelous job of selling science to their people.

"We also hear a great deal of loose talk to the tune that American science is inferior to that of Europe or Russia. The fact is that since 1951 more Nobel prizes in science have been awarded to Americans—18—than to Europeans and Russians combined, who have received 14. Since 1900, 47 have been awarded to Americans and three to Russians. Our friends abroad have done and are doing great scientific work, but so have Americans. We have not done nearly enough to make our work known and appreciated.

"Modern science is having, and will continue to have, profound effects on civilization and human life. It is so much a factor that we cannot afford to let the understanding of it rest in the minds of a highly trained few. I doubt that many American scientists hope to control their fellow men by keeping this understanding to themselves. But too much of the understanding is confined to them by default. They have an obligation to inform others much more than they have. But at the same time I think any citizen who is willing to undertake broad responsibility is equally obligated to become as informed on science as he can."—Gen. John E. Hull, president, Manufacturing Chemists' Assn. in talk, "Importance of Scientific Literacy."

Georgia Society Progresses

Members of the Georgia Plant Food Educational Society should be proud of their record of accomplishment in the state during 1957.

A recapitulation of progress made last year included a state-wide yield of 333 lb. lint an acre; the highest state average corn yield of 26 bu. an acre, with 151 farmers in the 1000 Bushel Corn Club; no decline in livestock numbers during the year; and a 1% increase in fertilizer consumption in the state in spite of adverse weather and the Federal farm program.

Quote

"You can buy a man's time; You can buy a man's physical presence in a given place; You can even buy a major number of skilled, muscular motions per hour per day, but you cannot buy enthusiasm; You cannot buy intitiative; You cannot buy loyalty; You cannot buy the devotion of hearts, minds, and souls. You have to earn those things."—Clarence Francis, retired chairman of the board, General Foods Corporation.

Croplife's Home Office

Croplife

BPA — *Member of Business Publications Audit*

NBP — *Member of National Business Publications*

CROPLIFE is a controlled circulation journal published weekly. Weekly distribution of each issue is made to the fertilizer manufacturers, pesticide formulators and basic chemical manufacturers. In addition, the dealer-distributor-farm adviser segment of the agricultural chemical industry is covered on a regional (crop-area) basis with a mailing schedule which covers consecutively, one each week, four geographic regions (Northeast, South, Midwest and West) of the U.S. with one of four regional dealer issues. To those not eligible for this controlled distribution Croplife subscription rate is $5 for one year ($8 a year outside the U.S.). Single copy price, 25¢.

LAWRENCE A. LONG
Editor

DONALD NETH
Managing Editor

EDITORIAL STAFF — John Cipperly, Washington Correspondent; George E. Swarbreck, Canadian and Overseas Editor; Emmet J. Hoffman, Marketing Editor; Duane F. McKenzie, Research Director.

ADVERTISING STAFF—Wilfred E. Lingren, Advertising Director; Carl R. Vetter, Advertising Department Manager; Bruce A. Kirkpatrick, Advertising Production Manager; R. Dale Swenson, Promotion Manager.

BUSINESS STAFF—Martin E. Newell, Chairman of the Board of Directors; Milton B. Kihlstrum, President and Treasurer; Wilfred E. Lingren, Executive Vice President; Don E. Rogers, Vice President; Paul L. Dittemore, Vice President; Donald Neth, Secretary; T. A. Gaden, Circulation Manager; James G. Pattridge, Assistant Treasurer; Richard Ostlund, Office Manager; Walter O. Buchkosky, Production Superintendent.

BRANCH OFFICES

EASTERN STATES—Paul L. Dittemore, Manager; James W. Miller and George W. Potts, Advertising Sales Representatives; Suite 3214, 551 Fifth Ave., New York 17, N.Y. (Tel. Murray Hill 2-2185).

CENTRAL STATES—Don E. Rogers, Manager; Henry S. French, Assistant Manager; Amos W. Standish, Advertising Sales Representative; 2832 Board of Trade Bldg., 141 W. Jackson Blvd., Chicago 4, Ill. (Tel. Harrison 7-6782).

SOUTHWEST—Martin E. Newell, Manager; Thomas E. Letch, Assistant Manager; 612 Board of Trade Bldg., Kansas City 5, Mo. (Tel. Victor 2-1350).

NORTHWEST—Paul A. Anderson, Advertising Sales Representative, P.O. Box 67, Minneapolis 40, Minn. (Tel. Franklin 4-5200).

WASHINGTON CORRESPONDENT — John Cipperly, 604 Hibbs Bldg., Washington, D. C. (Tel. Republic 7-8534).

EXECUTIVE AND EDITORIAL OFFICES — 2501 Wayzata Blvd., Minneapolis, Minn. Tel. Franklin 4-5200. Bell System Teletype Service at Minneapolis (MP 179), Kansas City (KC 295), Chicago (CG 340), New York (NY 1-2452), Washington, D.C. (WA 82).

Published by
THE MILLER PUBLISHING CO.
2501 Wayzata Blvd., Minneapolis, Minn.
(Address Mail to P. O. Box 67, Minneapolis 40, Minn.)

Associated Publications—The Northwestern Miller, The American Baker, Farm Store Merchandising, Feedstuffs, Milling Production.

MEETING MEMOS

May 14-15—Pennsylvania Plant Food Educational Society, Butler County, Pa.

May 15-23—Series of Fertilizer Meetings sponsored by the Virginia Polytechnic Institute Agricultural Extension Service; May 15 at Virginia Agricultural Experiment Station, Blacksburg; May 21 at Piedmont Research Station, Orange; May 22 at Eastern Virginia Research Station, Warsaw; May 23 at Southside Research Station, Charlotte.

May 19-21—Chemical Specialties Manufacturers Assn., Midyear Meeting, Netherland Plaza Hotel, Cincinnati.

May 21—Pacific Northwest Regional Grain Sanitation Committee, Spring Meeting, Walla Walla, Wash.

May 21-24—Western Chapter, National Shade Tree Conference, Disneyland Hotel, Anaheim, Cal., C. E. Lee, 601 W. 5th St., Los Angeles 53, Cal., secretary-treasurer.

May 22-23—Soil Science Society of North Carolina, First Annual Meeting, Williams Hall, North Carolina State College, Raleigh, N.C.

June 4—Executive Committee, Fertilizer Safety Section, National Safety Council, Hotel Roanoke, Roanoke, Va. Time: 9 a.m.

June 5-6—Pacific Northwest Grain Dealers Assn., Annual Convention, Davenport Hotel, Spokane, Wash.

June 9-11—Association of Southern Feed & Fertilizer Control Officials, Heart of Atlanta Motel, Atlanta, Ga., Bruce Poundstone, University of Kentucky, Lexington, Ky., Secretary-Treasurer.

June 12-14—Manufacturing Chemists' Assn., 86th Annual Meeting, The Greenbrier, White Sulphur Springs, W.Va.

June 15-18—National Plant Food Institute, Annual Meeting, Greenbrier Hotel, White Sulphur Springs, W. Va.

June 18-19—Annual meeting, American Grassland Council, North Carolina State College, Raleigh.

June 25-27—Pacific Branch, Entomological Society of America, San Diego, Cal.

June 28—Del-Mar-Va Peninsula Fertilizer Assn., Annual Meeting, Ocean City, Md.

July 8-10—Pacific Northwest Plant Food Assn., Ninth Annual Regional Fertilizer Conference, Pocatello, Idaho.

July 13-15—Plant Food Institute of Virginia and North Carolina, Summer meeting, Cavalier Hotel, Raleigh, N.C.

July 17-18—Southwest Fertilizer Conference and Grade Hearing, Buccaneer Hotel, Galveston, Texas.

July 29-30—Annual Fertilizer Industry Conference Sponsored by the Alabama Polytechnic Institute Experiment Station; Black Belt Substation near Marion Junction, Ala. (July 29) and Prattville, Ala. Experiment Field (July 30).

July 30—Kentucky Fertilizer Conference, Greenville, Ky.

Aug. 20-24—Canada Fertilizer Assn. (formerly Plant Food Producers of Eastern Canada), Annual Meeting, Manoir Richelieu, Murray Bay, Quebec.

Sept. 4—Grassland Field Day, Rutgers University Dairy Research Farm, Beemerville, N.J.

Oct. 14-15—Western Agricultural Chemicals Assn., Annual Meeting, Villa Hotel, San Mateo, Cal., C. O. Barnard, 2466 Kenwood Ave., San Jose 28, Cal., Executive Secretary.

Oct. 20—Annual Sales Clinic of Salesmen's Assn. of the American Chemical Industry, Inc., Roosevelt Hotel, New York.

Oct. 20-21—Fertilizer Section, National Safety Council, annual fall meeting, La Salle Hotel, Chicago, Ill.

Oct. 22-24—Pacific Northwest Plant Food Assn., Annual Meeting, Gearhart, Ore., Leon S. Jackson, P.O. Box 4623, Sellwood-Moreland Station, Portland, Ore., secretary.

Oct. 28-29—Northwest Garden Supply Trade Show, Masonic Temple, Portland, Ore.

Oct. 29-31—National Agricultural Chemicals Assn., 25th annual meeting, Bon Air Hotel, Augusta, Ga.

Nov. 9-11—California Fertilizer Assn., 35th Annual Convention, Ambassador Hotel, Los Angeles, Sidney H. Bierly, 475 Huntington Drive, San Marino 9, Cal., General Manager.

Nov. 24-25—Entomological Society of America, Eastern Branch, Annual Meeting, Lord Baltimore Hotel, Baltimore.

Dec. 1-4—Entomological Society of America, Annual Meeting, Hotel Utah, Salt Lake City.

Dec. 3-5—Agricultural Ammonia Institute, Annual Meeting, Morrison Hotel, Chicago, Jack F. Criswell, Claridge Hotel, Memphis, Executive Vice President.

Dec. 9-11—Chemical Specialties Manufacturers Assn., Annual Meeting, Commodore Hotel, New York.

Dec. 17-18—Beltwide Cotton Production Conference, Rice Hotel, Houston, Texas, sponsored by the National Cotton Council.

Jan. 20-22, 1959—California Weed Conference, Santa Barbara, Cal.

CALENDAR FOR 1958-59

MAY

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

JUNE

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

JULY

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

AUGUST

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

SEPTEMBER

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

OCTOBER

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

NOVEMBER

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

DECEMBER

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

JANUARY

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

FEBRUARY

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28

MARCH

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

APRIL

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

Spencer Names Two To Research Posts

KANSAS CITY—Spencer Chemical Co. has named Dr. Nat C. Robertson and Dr. O. V. Luke to top positions in its research and development division. Dr. Robertson was elected vice president in charge of research and development at the company's regular quarterly board of directors' meeting. He will be responsible for managing all of Spencer's research and development activities. He joined Spencer on Feb. 15 as general manager of research and development.

As director of central research, Spencer has named Dr. O. V. Luke. He will be managing all activities of the company's Research Center here which includes work in the fields of plastics and industrial and agricultural chemicals.

Before joining Spencer Dr. Robertson was a vice president and director of research for Escambia Chemical Corp. He holds degrees from Princeton University and Emory University. Dr. Luke was formerly manager of plastics research for the Celanese Corporation of America.

Lyle C. Abbott Named KVPD Vice President

MILWAUKEE—Lyle C. Abbott has been named vice president in charge of the agricultural division and a member of the board of Klau-Van Pietersom-Dunlap, Inc., Milwaukee advertising agency. His appointment was announced by Alan R. McGinnis, board chairman and treasurer of the agency.

Mr. Abbott succeeds Donald D. Dilworth, who is leaving the agency to become assistant advertising director of Deere & Co., Moline, Ill. A 1943 agricultural journalism graduate of Iowa State College, Mr. Abbott has been with the agency since 1952. He formerly was with the Iowa State College agricultural extension service, and later had an interest in a semi-weekly newspaper at Osceola, Iowa.

Classified Ads

Classified advertisements accepted until Tuesday each week for the issue of the following Monday.

Rates: 15¢ per word; minimum charge $2.25. Situations wanted, 10¢ a word; $1.50 minimum. Count six words of signature, whether for direct reply or keyed care this office. If advertisement is keyed, care of this office, 20¢ per insertion additional charged for forwarding replies. Commercial advertising not accepted in classified advertising department. Display advertising accepted for insertion at minimum rate of $11 per column inch.

All Want Ads cash with order.

FOR FAST ACTION AND RESULTS try Croplife's CLASSIFIED ADVERTISING

Norkem Expands

HOOD RIVER, ORE.—A new commercial chemical field service is preparing to enter the local market this spring. Norkem Corp., Yakima, Wash., agricultural chemical firm, will send Ray Carter, a field man, to this area. Mr. Carter served as the Yakima County horticulturist for 11 years. Norkem will distribute its products through six distribution centers in the area.

REMEMBER TO ORDER
CHASE BAGS
There's None Better!

INDEX OF ADVERTISERS

The index of advertisers is provided as a service to readers and advertisers. The publisher does not assume any liability for errors or omissions.

Allied Chemical & Dye Corp., Nitrogen Division
American Potash & Chemical Corp.
American Potash Institute
Anco Manufacturing & Supply Co.
Armour Fertilizer Works
Ashcraft-Wilkinson Co.

Baughman Manufacturing Co., Inc.
Bemis Bro. Bag Co. 8
Blue, John, Co.
Bradley & Baker
Broyhill Company, The 13
Burgess Publishing Co.

Chase Bag Co. 23
Chemagro Corp.
Chemical Eng. Serv. Div. of Manitowoc Shipbuilding, Inc.
Chemical Insecticide Corp.
Clover Chemical Co.
College Science Publishers 11
Collier Carbon & Chemical Corp.
Commercial Solvents Corp.
Consolidated Mining & Smelting Co.
Crown Zellerbach Corp.

Dallas Tank Mfg. Co.
Davison Chemical Co. 17
Deere, John, & Co.
Dempster Mill & Mfg. Co.
Diamond Alkali Co.
Dow Chemical Co.
E. I. du Pont de Nemours & Co., Inc.
Duval Sulphur & Potash Co.

Eastern States Petroleum & Chem. Corp. 7
Emulsol Chemical Corp.
Escambia Chemical Corporation

Food Machinery & Chemical Corp.
Flexo Products, Inc.

Gates Rubber Co.
Grace Chemical Co.
Grand River Chemical Div. of Deere & Co.

Harshaw Chemical Co.
Henderson Mfg. Co.
Hercules Powder Co.
Highway Equipment Co.
Hough, Frank G., Co. 4, 5

International Minerals & Chemical Corp.

Johns-Manville Corp.
Jones, Robin, Phosphate Co.

Kalo Inoculant Co.
Kent, Percy, Bag Co.
Kraft Bag Corp.

Maas, A. R., Chemical Co.
Merck & Co.
Meredith Publishing Co.
Meyer, Wilson & Geo., & Co.
Miller Chem. & Fert. Corp.
Monsanto Chemical Co.

National Distillers & Chemical Corp.
National Potash Co.
Naugatuck Chemical Div., U. S. Rubber Co.
Niagara Chemical Division
Nitrogen Div., Allied Chemical & Dye Corporation
Northwest Nitro-Chemicals, Ltd.

Olin Mathieson Chemical Corp.

Pacific Coast Borax Co.
Penick, S. B., & Co.
Pennsalt of Washington Div. of Pennsalt Chemical Corp.
Phillips Chemical Co., a subsidiary of Phillips Petroleum Co.
Potash Company of America 3

Raymond Bag Co.

Shattuck, S. W., Chemical Co.
Shell Chemical Corp.
Simonsen Mfg. Co.
Sinclair Chemicals, Inc.
Smith-Douglass Co., Inc.
Smith-Rowland Co., Inc.
Sohio Chemical Co.
Southern Nitrogen Co.
Spencer Chemical Co.
Spraying Systems Co.
Standard Oil Co.
Stepan Chemical Co.
Stewart-Warner Corp.
Suamico Eng. Corp.
Successful Farming

Tennessee Corp. 19
Tiura Mfg. & Sales Co.

Union Bag-Camp Paper Corp. 21
U. S. Borax & Chem. Corp.
U. S. Industrial Chemicals Co.
U. S. Phosphoric Products Division
U. S. Potash Co. 6
U. S. Rubber Co., Naugatuck Chem. Div.
U. S. Steel Corp.

Velsicol Chemical Corp.

Western Phosphates, Inc.

A Complete Sales Medium...

CROPLIFE is the only *complete sales medium* directed to the agricultural chemical industry. It is a *weekly* newspaper appealing to all segments of the industry. One of its editorial functions is to knit more closely together all those industry elements — manufacturers, agents, retailers, the educational echelon and farm advisor groups. It does this by:

- Keeping all segments informed of all industry news.
- Providing feature material designed to help manufacturers and mixers to do a better job, to help dealers sell and to help farm advisors and educational people make sound recommendations.
- Keeping all industry alert to current and proposed government action.
- Providing a channel through which news and advertising can reach all segments of the industry.

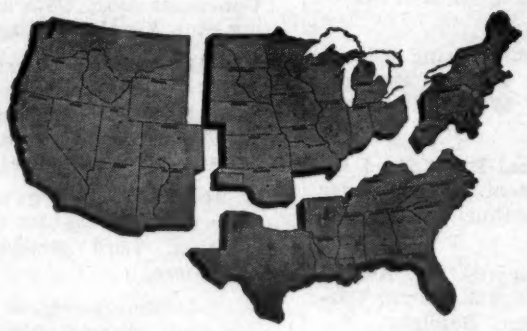
This new approach to business journalism for the agricultural chemical industry is being made by a company with 80 years of experience in newsgathering and publishing and one which has built an unchallenged reputation for reliability and service. Advertising of your products and services in Croplife will mean *richer sales fields* for you!

National Coverage Weekly . . .

Croplife's carefully controlled circulation provides national weekly coverage of manufacturers, formulators, mixers and ingredient suppliers.

Plus Regional Coverage by Marketing-areas . . .

In addition a unique regional circulation plan provides advertisers with a selective marketing-area coverage of wholesale and retail dealers and farm advisory personnel.



In addition to its national coverage, Croplife offers a selective regional circulation plan in these marketing-areas

WRITE—WIRE—PHONE our nearest office for a complete analysis of Croplife's important role in your advertising program.

BPA *Member of Business Publications Audit*

Croplife

...for richer sales fields

published by The Miller Publishing Co.

NBP *Member of National Business Publications*

NEW YORK
551 Fifth Ave.
MUrray Hill 2-2185

CHICAGO
2832 Board of Trade Bldg.
HArrison 7-6782

KANSAS CITY
612 Board of Trade Bldg.
Victor 2-1350

MINNEAPOLIS
2501 Wayzata Blvd.
FRanklin 4-5200